THE PLANT DISEASE REPORTER

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CROPS RESEARCH DIVISION

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SOME NEW AND IMPORTANT PLANT DISEASE OCCURRENCES AND DEVELOPMENTS IN THE UNITED STATES IN 1957

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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Crops Research Division serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

THE PLANT DISEASE REPORTER

MYCOLOGY AND PLANT DISEASE REPORTING SECTION

Crops Protection Research Branch Plant Industry Station, Beltsville, Maryland

SOME NEW AND IMPORTANT PLANT DISEASE OCCURRENCES AND DEVELOPMENTS IN THE UNITED STATES IN 1957

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Some 1956 reports on plant diseases are included in this summary which were not published when the 1956 summary was completed. Otherwise this summary includes important diseases of 1957, compiled for the most part from reports to the Mycology and Plant Disease Reporting Section and from articles in Phytopathology. Reports listed in the tables are not usually noted again in the text.

WEATHER OF 1957. General Summary. - - Wet weather in the central and lower Great Plains and Far Southwest, areas where disastrous drought in 1956 climaxed a 5- to 7-year dry period, was the outstanding feature of 1957. The blessings of rain were marred locally, however, by damaging floods and destructive storms.

Drought left the Plains and Southwest only to reappear in the Northeast where hot, dry weather during summer and early autumn cut crop production, created a high fire hazard several times, and reduced many municipal water supplies to the extent that drastic restrictions were necessary.

With adequate precipitation outside the Northeast, the absence of any widespread destructive freezes in spring and autumn, and generally favorable temperatures during the growing season, total crop production was next to the highest on record.

Severe storms took their usual toll. The most destructive single storm was Audrey, the only hurricane to enter the mainland of the United States during 1957. Tornadoes were again reported in record-breaking numbers, but fortunately deaths and losses were less than in some other years. The blizzard or snowstorm in the Southwest on March 22-25 was the worst winter storm. Hail damage was less than usual.

PRECIPITATION. --Precipitation for 1957 was well above normal in most of the nation. Deficiencies resulting in serious drought occurred only in the Northeast, particularly along the north Atlantic coast.

Deficiencies for the year ranged up to 25 percent in the Northeast, and several stations had their driest year on record, including Trenton, N. J., 28.79 inches and Hartford, Conn., 32.26 inches. In contrast, excesses for the year ranged up to 50 percent or more in the lower two-thirds of the area from the Rocky Mountain region to the Appalachians and in some sections of the Southeast. The following stations reported their greatest annual precipitation on record: Grand Junction, Colo., 15.69 inches; Lander, Wyo., 21.89; Cairo, Ill., 72.98; Shreveport, La., 67.23; Memphis, Tenn.,76.85; Knoxville, Tenn., 61.49. Many other stations from the central Rockies to the lower Appalachians reported their wettest year on record. 1957 was much the wettest year on record in Arkansas, with 22 stations reporting new annual records and Newhope measuring 98.55 inches for the greatest annual total ever reported in Arkansas.

At the end of 1956 severe drought extended from the middle Mississippi Basin through the central and lower Great Plains into the Far Southwest, and moisture was needed in California, southern Georgia, and most of Florida.

January precipitation replenished topsoil moisture in California and the southeastern Great Plains and eased the drought in Utah, southwestern Colorado, western New Mexico, and in Arizona. In most of the latter State streamflow was above normal at the end of the month. Heavy rains in southeastern Kentucky and nearby areas of the Virginias during the last 10 days of the month caused the worst floods at some points in nearly 100 years. Damage was in the millions of dollars. February rains brought further drought relief to Texas and Oklahoma, and beneficial amounts fell in Florida's citrus belt, but more was still needed in northern Florida and southern Georgia. Spring precipitation was above normal all over the country. March was especially wet in the central and lower Great Plains where some streams were flowing again for the first time in months, and topsoil was either replenished or greatly improved. Heavy rains in the Pacific Northwest improved ranges but caused some flooding in western Oregon. Heavy rains in April again soaked the Great Plains, and widespread floods occurred in Texas the last 10 days of the month. During May, another wet month except in some northern and eastern sections, floods occurred in Texas, Oklahoma, Arkansas, and south-central Kansas. By the end of May, moisture was adequate to excessive in the 1956 drought area and adequate elsewhere except in the Northeast.

Summer rainfall, spotty as usual, generally was adequate for growing crops except in the Northeast. Heavy June rains in the midcontinent area caused near record floods along several streams in the central Great Plains and in the upper Mississippi Basin, and prolonged flooding along the Red River in Louisiana. Late in June thousands of acres of crops were damaged or destroyed by floods along the Sioux and Vermillion Rivers in South Dakota, and up to 11 inches of rain from eastern Kansas to central Indiana caused more flooding and additional property and crop losses.

In early July the most damaging flood of record occurred along the Wabash and White Rivers in Indiana. On the 12th and 13th of July 6 to 10 inches of rain in the Chicago area caused the loss of 9 lives and heavy property losses. Numerous flash floods occurred during the second week of July in a belt extending from Kansas to Michigan. Texas and Oklahoma had very little rain in July and August, which was in great contrast to heavy rains of the 3 previous months, and both States needed more rain at the end of the summer. August rainfall was light in most of the country, but heavy amounts were recorded in the upper Mississippi Valley, parts of the Great Lakes region, Nebraska, and parts of the Rocky Mountain region. Dry, hot weather during August caused some crop decline in Kansas and Missouri.

Autumn precipitation was heavier than normal in most of the country. September was particularly wet in Oregon and northern California, the eastern Great Plains, and the South. Rainfall in the South totaled up to 20 inches or more and set several new records. Tropical storms contributed much to the total rainfall in the South during September, Debbie on the 7th bringing up to 9 inches to northwestern Florida and 2 to 4 inches to nearby areas and Esther, September 18-19, producing up to 5 inches or more from southeastern Louisiana to northern Florida. October precipitation was unusually heavy in parts of Texas and most of the Far West. It was one of the wettest Octobers on record in the Far Southwest. Heavy rains caused serious flooding in central Texas on October 12, and along most streams of the State's Gulf drainage area during the third week. November was unusually wet in the western Great Plains, the South, the upper Mississippi Valley, and Maine. Early in November more floods occurred in Texas, and during the third week widespread flooding occurred from Texas eastward and in the lower Ohio River drainage basin. Wet weather delayed cotton and corn harvests in the South and Midwest.

December was wet in the Northeast, the Ohio and middle Mississippi Valleys, the Great Lakes region, Oregon, and extreme southern Florida, but the month's precipitation was below normal elsewhere.

NORTHEASTERN DROUGHT. --The northeastern drought, serious during the growing season along the coast from southern Maryland to southern New England, began in January and did not completely end until December. Precipitation in this coastal area was only about 50 percent of normal for January, February, and March.

April precipitation was above normal owing to generous rainfall the first half of the month, but much above normal temperatures and almost no precipitation at all the second half created a high forest fire hazard in New England with numerous fires occurring in Massachusetts, New Hampshire, and Maine.

Although rains on May 14 and 15 relieved the fire hazard in New England and monthly totals were above normal in some interior sections, May rains were less than 50 percent of normal from southern New England to Virginia with some sections experiencing drought by the end of month. Rains on June 6 and 7 furnished some relief to developing drought conditions in Maryland and Virginia, but the month's rainfall was only 50 percent of normal or less in New Jersey, extreme southeastern New York, and southern New England.

July rainfall generally was less than 50 percent of normal from southern New England to the Carolinas, and severe drought gripped Rhode Island, southeastern Massachusetts, parts of Connecticut, New Jersey, extreme southeastern Pennsylvania, Delaware, central and eastern Maryland, and much of eastern Virginia. In the lower Appalachian region where July rainfall also was less than 50 percent of normal, signs of drought were showing up. The dry spell continued until August 25-26. Rains at that time improved pastures and furnished sufficient moisture for fall seeding, but came too late to help many crops.

Good rains fell in most of the East during September, but they were too light from southern

Maryland northward to bring more than slight relief. At Providence, R. I., the period January through September with only 17.71 inches of precipitation was the driest such period there since earliest records in 1832. The last week of September was almost rainless, and the forest fire hazard again become high in New England where numerous woods and brush fires were reported. In some parts of New England streamflow and ground water levels were unusually low and many wells dry. Soil moisture was short in nearly all sections of southern New England, and pastures were declining rapidly at the end of the month. Early October rains relieved the forest fire hazard, and monthly totals, normal or above, were sufficient to improve topsoil moisture; but, wells and streams remained low. November moisture, above normal along the coast and totaling 2 to over 4 inches either replenished or maintained ample topsoil moisture, but water shortages remained serious in some sections.

December rains, well above normal throughout the Northeast with totals ranging from 3 to 12 inches, further improved soil moisture and replenished water supplies that had been short since May in some sections. In New Jersey reservoir levels were raised 10 to 14 feet.

SNOWFALL. --In January many stations in the central Valley and along the central and southern coast of California had some snowfall for the first time in many years. Monthly totals were much above normal in the Rocky Mountains and Northeast.

February snowfall was much below normal nearly everywhere. March snowfall, below normal in most areas, was notable mainly for some heavy falls in the northern Great Plains and upper Mississippi Basin during a blizzard on the 14th and 15th, and near record amounts in the southwestern Great Plains from the 22d through the 25th. April snowfall was unusually heavy in most northern areas between the Rocky Mountains and the Appalachians.

Some unusually early snows fell in central areas during October, and on November 17 to 19 heavy falls were recorded from the southwestern Great Plains to the upper Mississippi Valley. December snowfall was below normal.

TEMPERATURE. --Areas with average temperatures above and below normal for the year were about equal, with extreme departures ranging from 2° or more above in the Northeast to 2° or more below in the central Great Plains.

January weather in much of the North was the coldest in many years and greatly reduced the peach crop in the Northeast and Pacific Northwest. The following February was abnormally mild in virtually the entire Nation, with average temperatures the highest of record in the Far Southwest while monthly maxima set new records at many stations from Yuma, Ariz., to Jacksonville Fla., and northward to Columbus, Ohio, and Wilmington, Del.

Spring (March, April, May) temperatures averaged about normal, although April was relatively cool in the western Plains. During a cold snap from March 6 to 11, freezing extended into the Florida Everglades and caused some local crop damage. On April 7-15, another cold period, temperatures fell to record low levels for the season in the lower Great Plains where 30° recorded at Fort Worth, Tex., on the 13th was the latest freeze and lowest temperature ever recorded there in April. East of the Rockies summer heat prevailed during the latter half of the month. A freeze on May 17 in the Northeast caused some local crop damage.

Average summer temperatures were relatively cool in the Pacific Northwest and Great Basin, but unusually hot in the drought area along the northeastern coast. In the latter area temperatures occasionally neared record highs in June and July.

Autumn temperatures averaged above normal in the Northeast and along the west coast and below in most of the remainder of the country. October was relatively cool nearly everywhere, and a cold snap from the 24th to the 29th reduced temperatures to record low levels for the season in many southern areas east of the Rockies where some stations reported their first freeze of the season about a month earlier than normal. November was among the coldest such months of record in Texas and the Great Basin. Elsewhere, temperatures averaged about normal for the month, but were characterized by frequent and sometimes sharp changes.

December was relatively mild except in Florida where average temperatures were slightly below normal. It was among the mildest Decembers on record in northern areas. Nevertheless, a major outbreak of cold air on the 10th to the 13th brought freezing deep into the South, and low readings in Florida on the 12th and 13th, approximating those of December 1934 and January 1940, caused extensive crop damage.

STORMS AND UNUSUAL WEATHER PHENOMENA

TORNADOES. --These storms, setting new records for the greatest number in a single year (924) and for a single month (May, 230), accounted for 191 deaths, and about $75 million damage.

Major outbreaks occurred as follows:

Southern regions. --January 22; April 1-8, 21-25; June 8 and 28; October 15-16; November 7.

Midwest. --May 14; December 18.

North-central regions. --May 20; June 13-14 and 20.

Northeast. --June 18-19.

The year's worst tornado moved through the Kansas City, Mo., suburbs on May 20, killing at least a score of persons, injuring nearly 200, and damaging property to the extent of millions of dollars. Other well known cities hit during the year included Dallas and Austin, Tex., Springfield, Ill., and Fargo, N. Dak. The Fargo tornado, described as the worst in the history of North Dakota, killed 10, injured over 100, and destroyed property valued in millions of dollars on June 20.

HURRICANES. --Only one of these storms entered the mainland of the United States. Audrey, on June 27-29, moved from southwestern Louisiana to Lake Ontario, but lost hurricane strength soon after leaving Mississippi. Deaths totaled 390 and property losses over $150 million.

HAIL. --Losses were about $62 million, the least since 1953. Hail caused damage in the neighborhood of a million dollars on August 2 at Cheyenne, Wyo.

Wind and hail in the Northern Great Plains and upper Mississippi Valley on July 2-4 were responsible for property and crop losses of millions of dollars. In western South Dakota at 8 p.m. July 2, hailstones up to 16 inches in circumference were reported and a few young livestock were killed. In the extreme southeastern part of the same State from 11 p.m. of the 3d to 1 a.m. of the 4th, one of the most destructive hailstorms in the history of the State devastated an area 8 miles wide from Freeman, S. Dak., to Hawarden, Iowa; stones reached baseball size, cattle were bruised, several hogs killed, and bark stripped from trees.

SHOWER OF FROGS AND FISH. --This latest phenomenon occurred at Magnolia Terminal near Thomasville, Ala., according to a story in the "Thomasville Times" of that city on the 3d of July 1957. The story related that little fish fell by the thousands on Friday morning, the 28th of June 1957, during a rainstorm. The fish, many still alive, were found between crossties on the railroad tracks, and residents filled containers with bass, bluegill, bream, and other species. Some crayfish and tiny frogs also fell. The story was confirmed by reliable observers. A tornado, suspected to have occurred in southwestern Alabama before 8 a.m., the 28th, may have been responsible for the event. The above account is the latest documented testimony to these rare phenomena.

INJURY BY HAIL. --On the 23d of June 1957, a few miles west of Fort Stockton, Tex., 21 persons caught without shelter were injured by hailstones ranging up to baseball size.

BLIZZARDS. --The most destructive storm of this type occurred March 22-25 in the western Great Plains from Wyoming to New Mexico. This storm, reaching blizzard proportions in many sections, was among the worst on record for so late in the season. It took a heavy toll of livestock, and damaged power and communication lines.

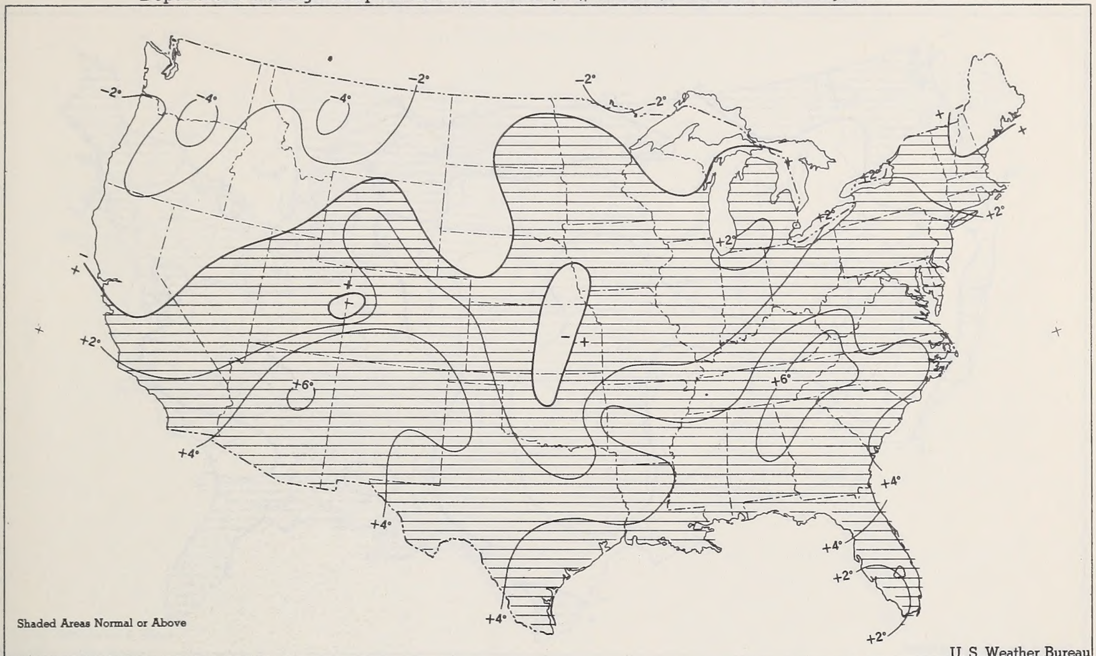
Another blizzard occurred in eastern and south-central Colorado on April 1-2 when up to 50 inches of snow fell in the mountains, causing hundreds of thousands of dollars damage.

WINDS OTHER THAN HURRICANES AND TORNADOES. --These winds were responsible for about 200 deaths and property damage of more than $40 million. On November 21-22, Santa Ana winds in southern California were responsible for hundreds of thousands of dollars damage and for brush fires spreading over 28,000 acres. (From U. S. Department of Commerce Weather Bureau Climatological Data, National Summary, Annual 1957, Vol. 8 (13); 1-3).

The maps on pages 43, 44, 45, 46, show the temperature and precipitation for the winter 1956-1957, spring, summer and fall, of 1957. (From U. S. Department of Commerce Weather Bureau, Weekly Weather and Crop Bulletin, Volume 44, 1957).

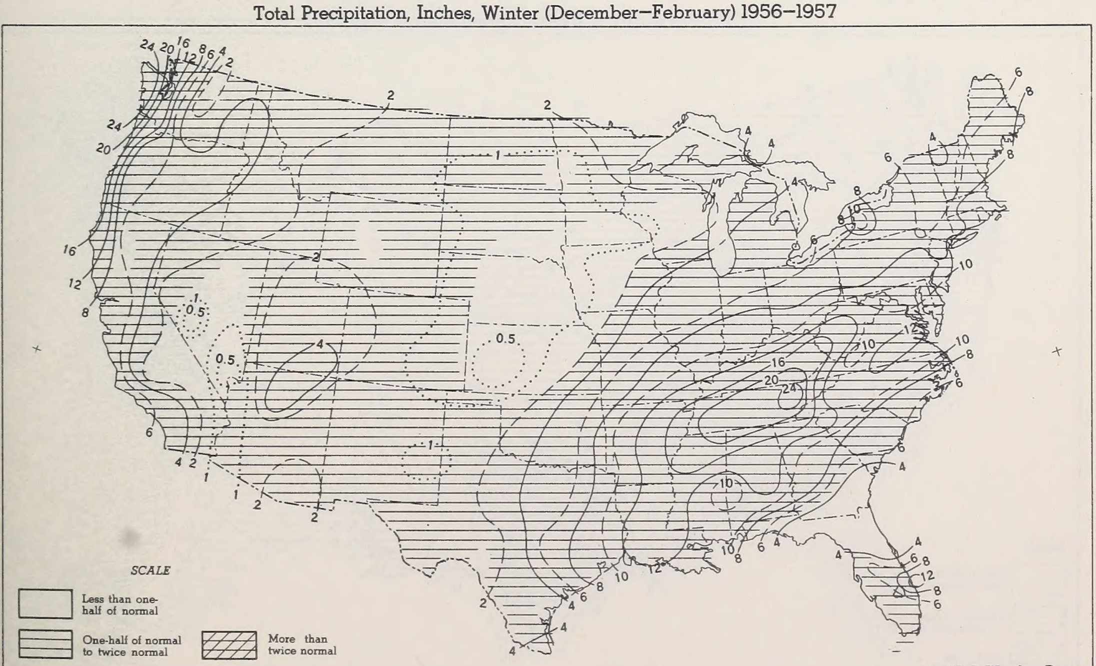
TEMPERATURE AND PRECIPITATION

Departure of Average Temperature from Normal (°F.), Winter (December–February) 1956–1957



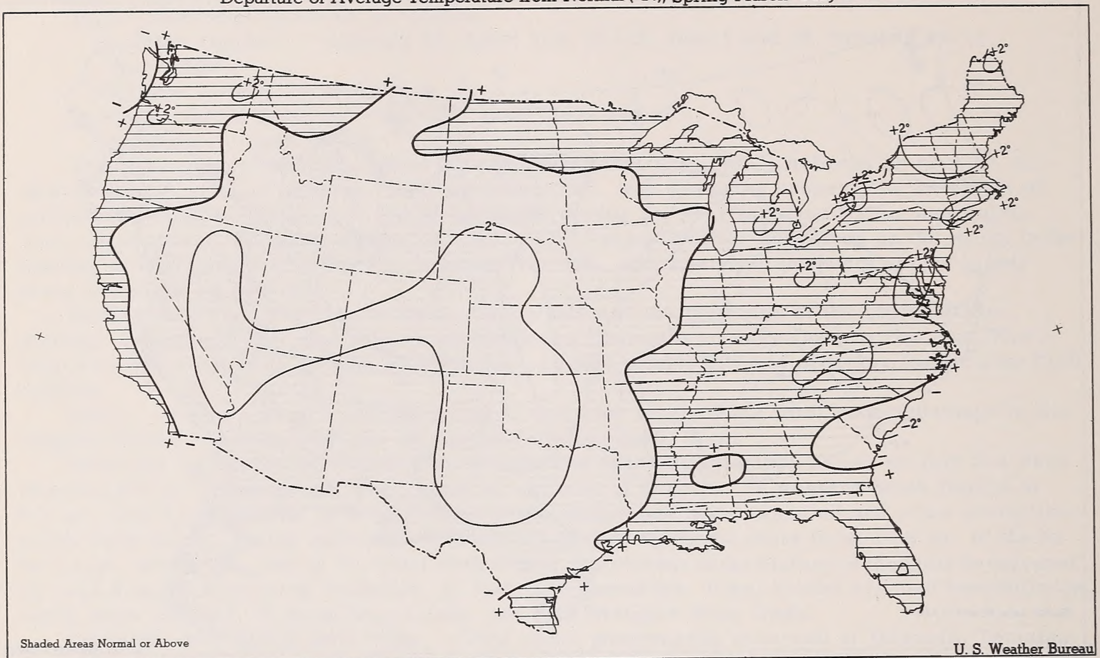
Based on preliminary telegraphic reports

Total Precipitation, Inches, Winter (December–February) 1956–1957



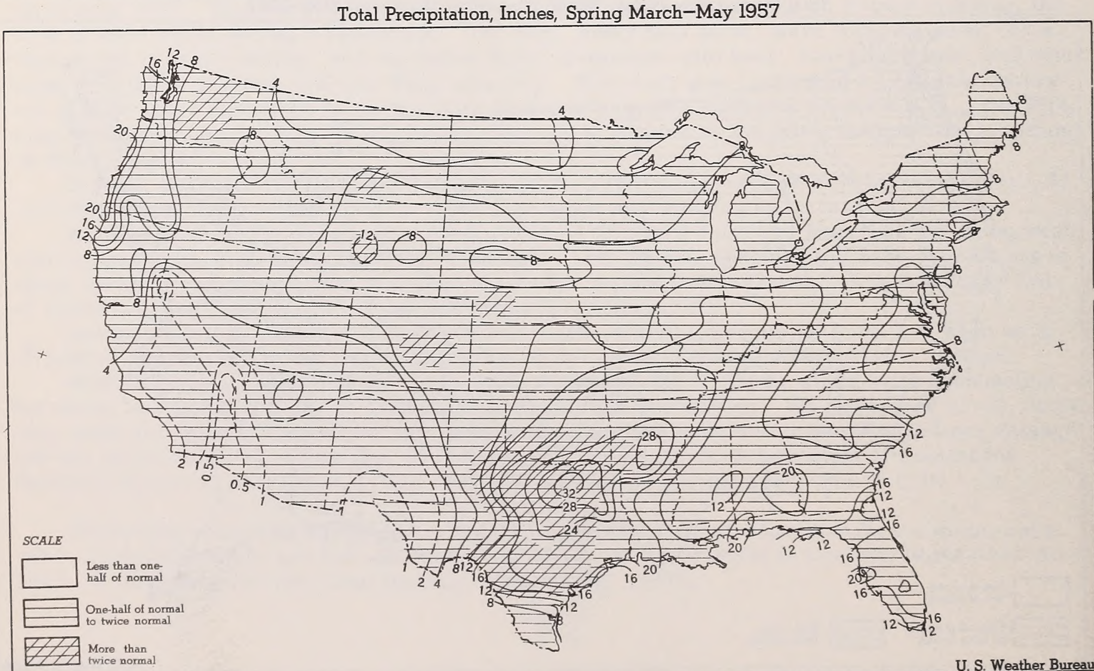
Based on preliminary telegraphic reports

Departure of Average Temperature from Normal (°F.), Spring March–May 1957



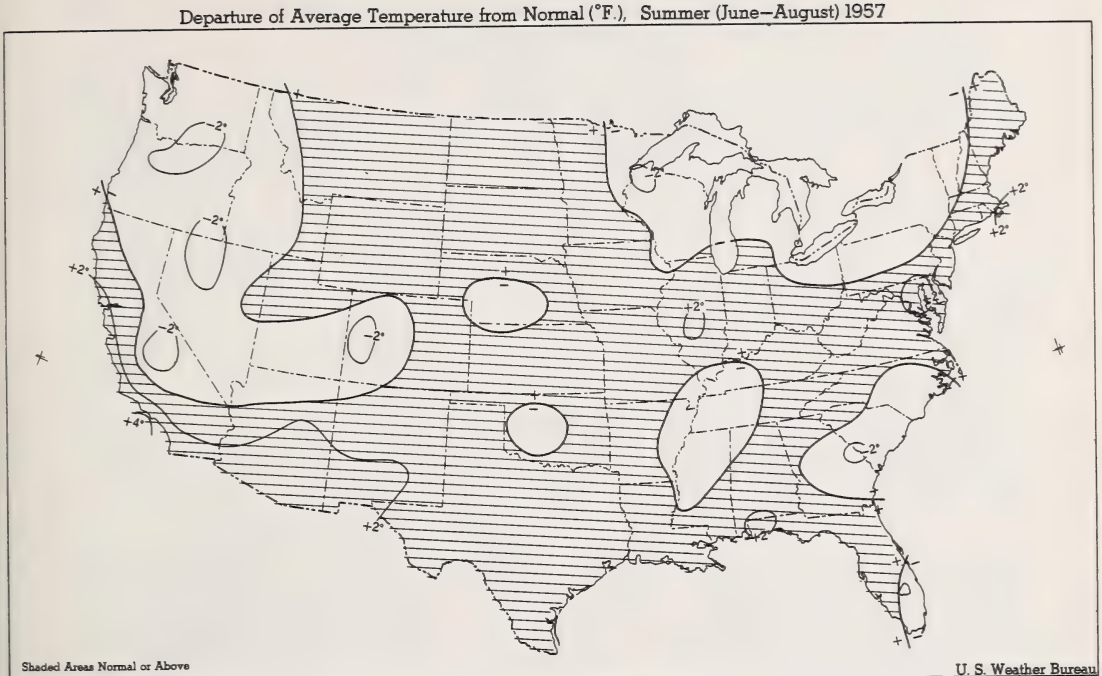
Based on preliminary telegraphic reports

Total Precipitation, Inches, Spring March–May 1957



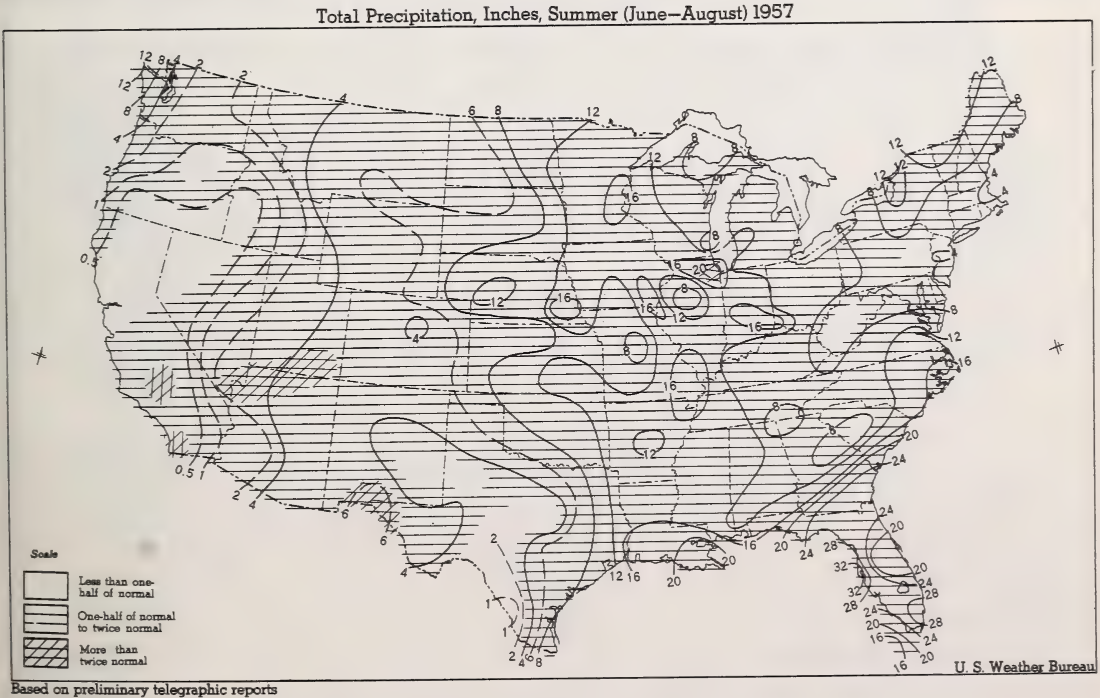
Based on preliminary telegraphic reports

Departure of Average Temperature from Normal (°F.), Summer (June–August) 1957

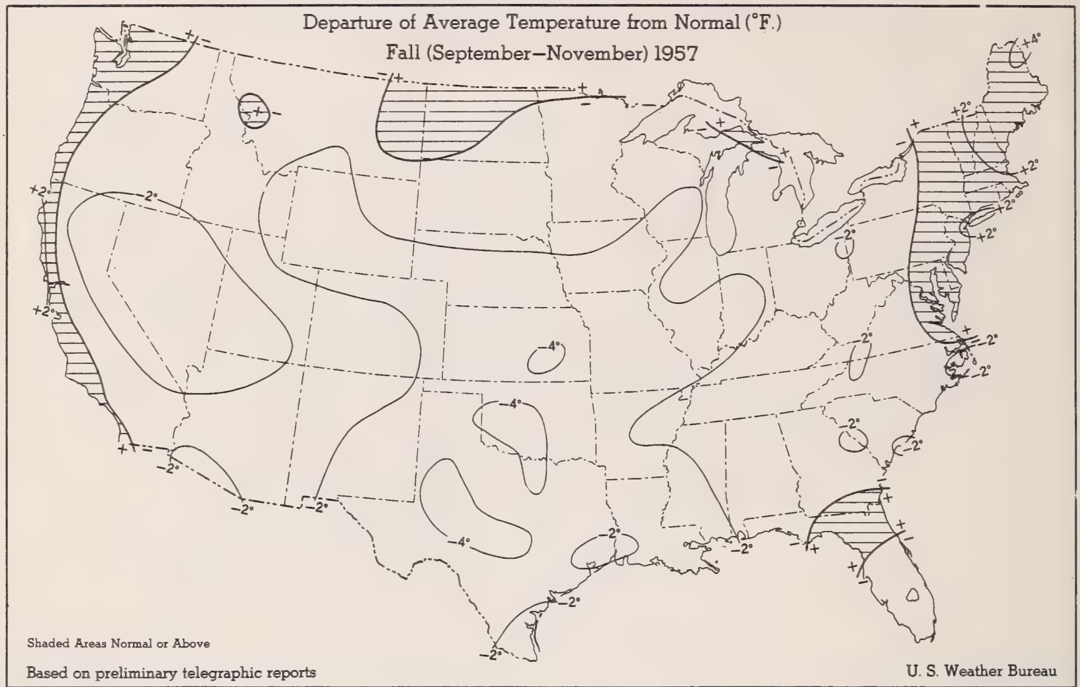


Based on preliminary telegraphic reports

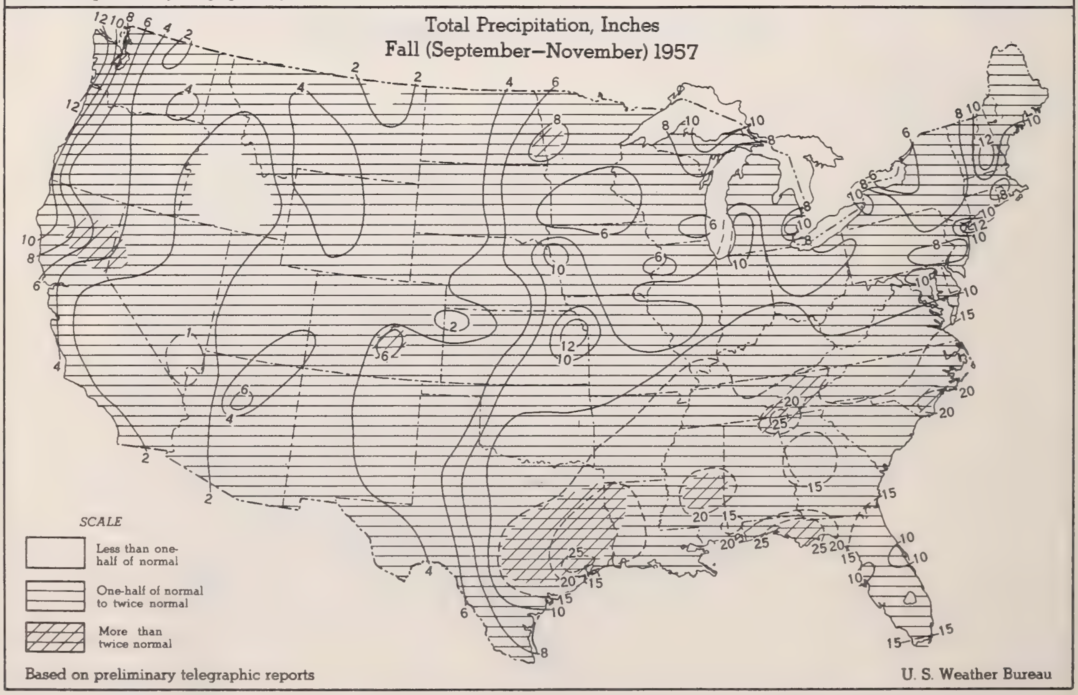
Total Precipitation, Inches, Summer (June–August) 1957



Based on preliminary telegraphic reports



Departure of Average Temperature from Normal (°F.)
Fall (September–November) 1957



Total Precipitation, Inches
Fall (September–November) 1957

(From Weekly Weather and Crop Bulletin National Summary, Volume 44, 1957)

Table 1. Diseases reported in States where they had not been found or reported on a particular host until 1957[1].

Host Disease	Where found	Remarks
TRITICUM AESTIVUM (WHEAT) Puccinia striiformis (P. glumarum) (Rust)	Kansas	Found on Kansas wheat for the first time in history (PDR 42: 726).
ZEA MAYS (CORN) Puccinia polysora (Rust)	Arkansas	During the summer of 1957 specimens were sent in from Poinsett and Crawford Counties (PDR 42: 402).
FICUS CARICA (FIG) Physopella fici (Rust)	Arkansas	During the summer of 1957, fig leaves heavily infected with rust were collected from Ashley and White Counties (PDR 42: 402).
FRAGARIA spp. (STRAWBERRY) Macrophomina phaseoli (Botryodiplodia phaseoli) (Charcoal rot)	Illinois	Plants collected from Centralia area of south-central Illinois, September 29, 1957. Its importance on strawberry has not been fully evaluated (PDR 42: 107).
FRAGARIA spp. (STRAWBERRY) Aster yellows (Virus)	Michigan	Found in a field near Keeler in 1957 (PDR 42: 72).
MALUS SYLVESTRIS (APPLE) Cephalosporium carpogenum (Cephalosporium rot)	Pennsylvania	Fruits were taken from storage, where they had been placed immediately after harvest. First report from Pennsylvania (PDR 42: 156).
PRUNUS DOMESTICA (PRUNE) Prune dwarf (Virus)	West Virginia	Observed during the growing season of 1947 (PDR 42: 202)
PRUNUS PERSICA (PEACH) Peach mosaic (Virus)	West Virginia	Observed 6n Elberta peach and an unknown variety (PDR 42: 202).

[1] See also Neely, Dan. Diseases of woody hosts new to Illinois. PDR 42: 711.

Table 1. (Continued)

Host Disease	Where found	Remarks
CHLORIS VERTICILLATA Ascochyta brachypodii SETARIA LUTESCENS Cercospora setariae BOUTELOUA GRACILIS Cochliobolus boutelouae SPOROBOLUS NEGLECTUS Helminthosporium giganteum ERAGROSTIS PILOSA Helminthosporium kusanoi PANICUM SCRIBNERIANUM Septoria tandilensis ELYMUS VIRGINICUS Ustilago macrospora	Kansas	This study was made during 1956 and 1957. Seven fungi previously unreported for Kansas, were found associated with grass diseases (PDR 42: 346).
DACTYLIS GLOMERATA (ORCHARD GRASS) Corynebacterium rathayi (Rathay's disease)	Virginia	Specimens collected near Upperville May 22, 1957. Severe infections were observed in Fauquier and Loudoun Counties (PDR 41: 598).
CAMELLIA JAPONICA (CAMELLIA) Sclerotinia camelliae (Petal blight)	Texas	Specimen was received from Longview, Texas. Texas has no quarantine against the importation of potted camellias. Balled or potted camellia plants have been imported from California on many occasions (PDR 41: 547).
MUSA sp. (ORNAMENTAL BANANA PLANT) Radopholus similis (Burrowing nematode)	Louisiana	Appears to be the first report on this host in Louisiana. Other reports from sugarcane roots, and from Pothos and Philodendron in two nurseries (PDR 41: 814).
PHORADENDRON FLAVESCENS (MISTLETOE) Cercospora struthanthi (Leaf spot)	Florida	Found December 18, 1957 on the campus of the University of Florida (PDR 42: 272).
CATALPA SPECIOSA (Western catalpa) Verticillium albo-atrum (Verticillium wilt)	Kansas	Apparently the first report on this host in Kansas (PDR 41: 1054).

Table 1. (Continued)

Host Disease	Where found	Remarks
CERCIS CANADENSIS (REDBUD) Verticillium albo-atrum (Verticillium wilt)	Kansas	This is the second State record in the United States, the other being from Illinois (PDR 41: 1053).
PICEA SITCHENSIS (SITKA SPRUCE) Lophodermium filiforme (Needle cast)	Oregon	Plantations of 25-year-old Sitka spruce growing in the Coast Range have in recent years shown considerable dropping of two-year-old needles. The disease was mostly brought in on the planting stock (PDR 41: 650).
ULMUS spp. (ELM) Ceratocystis ulmi (Dutch elm disease)	Kansas	Found in Kansas City, Kansas on October 18, 1957, from two trees in Wyandotte County, and one tree in Johnson County. First record from Kansas, although it has been reported from Kansas City, Missouri (PDR 42: 402).
ULMUS AMERICANA (MOLINE ELM) Verticillium albo-atrum** (Verticillium wilt	Kansas	This is the second report of this disease on Moline elm in the United States, the other being from Illinois (PDR 41: 1053).
NICOTIANA TABACUM (TOBACCO) Pseudomonas angulata (Angular leaf spot)	Florida	Observed during May and June 1957 in fields of flue-cured tobacco growing near Newberry. Severe in one field. First report of angular leaf spot in State, though P. tabacum has been known to occur (PDR 41: 804).
ALLIUM CEPA (ONION) Sclerotium cepivorum (White rot)	New York	Found in two muckland onion fields near Florida, New York in June 1957. Appears to be first report from this State (PDR 41: 814).
BETA VULGARIS (SUGAR BEET) Heterodera schachtii (Sugar beet nematode)	South Dakota	Sugar beet roots contained many cysts and a high larval population density was found in the soil (PDR 42: 280).
CUCUMIS SATIVUS (CUCUMBER) Cercospora citrullina (Cercospora leaf spot)	North Carolina	During the summer of 1957 Cercospora leaf spot was observed in the field in North Carolina. It has been observed in seven counties (PDR 41: 794).

Table 1. (Continued)

Host Disease	Where found	Remarks
CUCURBITA MAXIMA (BLUE HUBBARD SQUASH) Xanthomonas cucurbitae (Bacterial leaf spot)	Washington	This is a seed-borne bacterial cotyledon spot of squash (PDR 42: 425).
CUCURBITS (CUCUMBER) (SQUASH) (WATERMELON) Pseudoperonospora cubensis (Downy mildew)	Illinois	A severe epiphytotic of downy mildew developed on the fall crop of cucumber and squash in southern Illinois. It also attacked leaves and stems of watermelon (PDR 42: 554).
LYCOPERSICON ESCULENTUM (TOMATO) Sclerotinia stem rot (Sclerotinia sclerotiorum)	Louisiana	This disease was discovered April 5, 1957 at the Plaquemines Parish Experiment Station. Weather conditions were favorable for the development of the disease (PDR 41: 643).
RADICULA ARMORACIA (HORSERADISH) Rhizoctonia solani (Rhizoctonia rot)	Connecticut	Locally grown horseradish roots developed a firm, fibrous, odorless rot in storage (PDR 42: 554).

Table 2. Diseases found or reported in this country for the first time in 1957=*; diseases found on new hosts=**, (see also footnotes[1-5]).

Host	Where found	Remarks
ORYZA SATIVA (RICE) Gibberella fujikuroi* (Bakanae disease)	Texas	At the Rice Pasture Experiment Station at Beaumont diseased rice seedlings scattered throughout the field showed symptoms similar to those of the bakanae disease in Japan. First report of this disease in the United States (PDR 41: 860).
ORYZA SATIVA (RICE) Hoja blanca* (white leaf)	Florida	Found for the first time in the U.S. near Belle Glade in September 1957. Causal agent possibly an insect-transmitted virus. All of the U.S. long-grain varieties and the common short-grain varieties were susceptible (PDR 41: 911).

Table 2. (Continued)

Host Disease	Where found	Remarks
GLYCINE MAX (SOYBEAN) Phytophthora sojae M. J. Kaufmann & J. W. Gerdemann (Root and stem rot)	Illinois Indiana Missouri North Carolina Ohio	The fungus appears distinct from previously described species of Phytophthora, and the name Phytophthora sojae n. sp. was proposed. (Phytopath. 48: 201).
STENOTAPHRUM SECUNDATUM (ST. AUGUSTINE GRASS) Puccinia stenotaphri* (Rust)	Florida	Found around the Lake Okeechobee area. Disease fairly prevalent but damage to grass seemed negligible. 1st rept. in this country (PDR 41: 650).
AEGILOPS CYLINDRICA (GOATGRASS) Tilletia contraversa** (Dwarf bunt)	Utah	Specimens were collected near Nephi, during the summer of 1955. With this addition the known host range now includes ten genera (PDR 42: 18).
LAMIUM AMPLEXICAULE (HENBIT DEADNETTLE) LUPINUS ALBUS (WHITE LUPINE) SESBANIA MACROCARPA (HEMP SESBANIA) Soybean cyst nematode** (Heterodera glycines)	Tennessee	L. amplexicaule is a member of the Labiatae and the first host reported outside of the Leguminosae. This host range is extended as a result of a series of tests in the greenhouse (PDR 42: 194).
PHLEUM PRATENSE (TIMOTHY) Puccinia poae-nemoralis** (Rust)	Wyoming	Collected in the summer of 1957 in the Grand Teton National Park. This report appears to be the first on this host (PDR 42: 533).
CITRUS LIMONIA (LEMON) Hemicycliophora sp.** (Ectoparasitic nematode)	California	Found parasitizing Rough Lemon roots in the Coachella Valley of Southern California (PDR 41: 1016).
PRUNUS CERASUS (SOUR CHERRY) Midleaf necrosis (Virus)	Oregon	Described as a new virus of stone fruits by J. A. Milbrath. Infected trees were markedly smaller in size and less vigorous than healthy trees. It has been observed in several commercial orchards in Oregon (Phytopath. 47: 637-640).
PRUNUS LYONII (CATALINA CHERRY) Coryneum beijerinckii** (Shot hole)	California	In the spring of 1956, at Fresno, a planting of Catalina cherry was found to be severely affected by a shot hole disease. The disease was found in several other locations in the State following this outbreak (Phytopath. 47: 532).

Table 2. (Continued)

Host Disease	Where found	Remarks
PRUNUS PENSYLVANICA (PIN CHERRY) Monilinia vaccinii-corymbosi** (Mummy berry)	Michigan	First report on this host (PDR 42: 71).
VACCINIUM AUSTRALE (BLUEBERRY) Armillaria mellea** (Root rot)	Michigan	First report on this (PDR 42: 71).
ABELIA CHINENSIS (ABELIA) Cercospora sp.** (Cercospora leaf spot)	Illinois	Found near Vienna, Johnson County, on August 13. First report on this host (PDR 41: 904).
HYACINTHUS ORIENTALIS (HYACINTH) Botrytis hyacinthi** (Gray mold)	Washington	Has been found twice, in 1949 and 1956 in restricted locations. The acreage devoted to hyacinths in western Washington is small, but has been increasing during the past few years. Since climatic conditions are so favorable for Botrytis development in this area, the establishment of B. hyacinthi, should it occur, would undoubtedly be a retarding factor in the production of hyacinth bulbs in Washington (PDR 42: 534).
MALVA spp. (MALLOW) Malva yellow vein mosaic* (Virus)	California	An apparently unrecorded but widespread virus disease. It has been mechanically transmitted. The green peach aphid is a vector. The disease may be identical with the one reported on Malva plants in Europe (PDR 41: 1006).
CORNUS NUTTALLII (WESTERN FLOWERING DOGWOOD) Fusicladium sp.*	Oregon	An apparently undescribed disease affecting western flowering dogwood has been under observation for three springs in the Williamette Valley (PDR 41: 810).
ELAEAGNUS ANGUSTIFOLIA (RUSSIAN OLIVE) Verticillium albo-atrum** Verticillium wilt)	Kansas	First report on this host (PDR 41: 1053)

Table 2. (Continued)

Host Disease	Where found	Remarks
HEBE BUXIFOLIA Fusarium oxysporum f. hebae R. D. Raabe (Fusarium wilt)	California	A serious, previously unreported disease that results in the death of infected plants was found recently in a nursery in the San Francisco Bay area (Phytopath. 47: 532).
JUGLANS REGIA (PERSIAN WALNUT) Erwinia nigrifluens E. E. Wilson, M. P. Starr & Joyce A. Berger (Bark canker)	California	An apparently undescribed disease of Persian walnut was found in the Sacramento Valley in 1955. It does not seem to be prevalent in other parts of the State (Phytopath. 47: 669).
PHOTINIA GLABRA Entomosporium maculatum**	Louisiana	First report of this fungus on this host, but the disease is common on another species of Photinia in California (PDR 41: 643).
PHOTINIA SERRULATA Cercospora photinia-serrulatae L. Anzalone, Jr. & A. G. Plakidas (Cercospora leaf spot)	Louisiana	Nurserymen in Louisiana have had difficulty for several years in growing salable plants mainly because of this previously undescribed species of Cercospora (Phytopath. 47: 515).
POPULUS TREMULOIDES P. GRANDIDENTATA and HYBRIDS Plagiostoma populi Cash & Waterman	Massachusetts	A new species of Plagiostoma associated with a leaf disease of hybrid aspens. Severe outbreak occurred in 1954 (Mycologia 49: 756-760).
TEUCRIUM FRUTICANS (BUSH GERMANDER) UMBELLULARIA CALIFORNICA (CALIFORNIA LAUREL) JUNCUS LESEURII (SALT RUSH) Meloidogyne hapla** (Root-knot nematode)	California	Found in localities that have never been under cultivation. Both of these plants are native to California soils which would suggest that M. hapla may also be native to the State (PDR 41: 770).
GOSSYPIUM (COTTON) New virus disease	Texas	Symptoms were found on almost all the 5000 Deltapine and Empire cotton plants in the greenhouse at Brownsville. The virus was transmitted by grafting to healthy Empire plants but not, apparently, by seed (PDR 41: 726).

Table 2. (Continued)

Host Disease	Where found	Remarks
SESAMUM INDICUM (SESAME) Verticillium albo-atrum** (Verticillium wilt)	New Mexico	V. albo-atrum caused a severe wilt of sesame growing in infested soil at the Agricultural Experiment Station. This is apparently the first published record of the disease on sesame in the United States (PDR 41: 803).
APIUM GRAVEOLENS (CELERY) Colletotrichum sp. (Anthracnose)	Florida	A new disease of celery in Florida is described. Tribasic copper sulfate provided excellent control. The causal fungus was similar to C. truncatum (R. S. Cox. PDR 41: 790).
BRASSICA RAPA (TURNIP) Verticillium albo-atrum** (Verticillium wilt)	Kansas	Apparently the first record on this host (PDR 41: 1053).

[1] Costa, A. S. and James E. Duffus. Observations on lettuce mosaic in California. PDR 42: 583. Studies with the lettuce mosaic virus showed that its host range included a number of previously unreported weed hosts, which may serve as an additional source of virus for lettuce growing in nearby areas.

[2] Coursen, B. W., R. A. Rohde and W. R. Jenkins. Additions to the host lists of the nematodes Paratylenchus projectus and Trichodorus christiei. Of 101 plant species and varieties tested, 89 were found to be hosts of the pin nematode, P. projectus. The known host range of the stubby-root nematode, T. christiei, was extended with the addition of 66 more plant species and varieties. PDR 42: 456.

[3] Hooper, B. E. Plant-parasitic nematodes in the soils of southern forest nurseries. PDR 42: 308. New host records are reported for Meloidodera floridensis, Pratylenchus brachyurus, Tylenchorhynchus claytoni. An undescribed species of Tylenchorhynchus was found parasitizing Pinus elliottii.

[4] Meiners, J. P., and J. R. Hardison. New host records for dwarf bunt in the Pacific Northwest. II. PDR 41: 983-985. 1957. Seven grass species, infected with the dwarf bunt fungus, Tilletia contraversa in the Pacific Northwest were reported as additions to the world list of grass hosts for dwarf bunt. For the first time in North America dwarf bunt was found on Agropyron repens.

[5] Rogerson, Clark T. Diseases of grasses in Kansas: 1956-1957. PDR 42: 346. Twenty-one new Kansas host records were obtained.

GENERAL

E. B. Cowling has presented a partial list of fungi associated with decay of wood products in the United States (PDR 41: 894).

Frank P. McWhorter and W. C. Cook reported the hosts and strains of pea enation mosaic virus in Oregon (PDR 42: 51).

R. R. Nelson reported results of preliminary studies on the host range of witchweed, Striga asiatica, made in North Carolina mainly to determine whether the form of the parasite present in the United States and that in the Eastern Hemisphere differ or are similar in host specificity (PDR 42: 376).

The "most probable number" method for estimating populations of plant pathogenic organisms in the soil was reported by Otis C. Maloy and M. Alexander in New York. The method has been adapted to the estimation of populations of two plant pathogenic fungi, Fusarium solani f. phaseoli and Thielaviopsis basicola, in the soil. Good agreement was observed between estimates of populations based on plate counts of the spore suspensions used to infest sterile soil and estimates made by the "most probable number" method (Phytopath. 48: 126).

In New Jersey, Reed A. Gray reported the translocation of antibiotics in plants (Phytopath. 48: 71).

The antibiotic Cytovirin was effective against several plant viruses in tests reported by Reed A. Gray (PDR 41: 576).

J. D. Panzer and R. D. Beier, at Fort Detrick, Maryland, described an improved method of using a tent for field inoculation of test plants (PDR 42: 172).

N. R. Gerhold and R. D. Barmington, at the Colorado A & M Agricultural Experiment Station, described a planter for use on experimental plots. For plant pathological investigations, they pointed out, it is important that seeding rates be adequate and uniform when evaluating seed treatment, soil treatments and variety trials. Since present day commercial planters will not do precision work on small experimental plots, they devised this planter to serve such needs (PDR 41: 227).

In Missouri, M. N. Rogers reported a small electrical hygrometer for microclimate measurements. This remote reading instrument removes almost negligible quantities of moisture from the air during operation and may be used in still air or in small inclosed spaces. Full details regarding its construction, calibration, and use are given (PDR 41: 897).

In the Crops Research Division, at Beltsville, Maryland, E. B. Lambert reported a technique for transferring inoculum through a flame, devised to reduce contamination during the transfer of cultures into wide mouth bottles. The cotton plugs should be moistened generously with water spray before the transfers are begun (PDR 41: 903).

In an inoculation technique described by J. D. Panzer and others at Fort Detrick, Maryland, inoculum is dispersed by means of an explosive charge coupled to an electrical ignition device. A clock adapted so that an electrical contact would be made every hour for a period of 24 hours enables the investigator to make field or greenhouse inoculations during his absence. This method has proven successful for greenhouse inoculation and should be adaptable for field inoculations during periods of darkness and during adverse weather conditions (PDR 41: 225).

J. A. West recommended some changes in recovery techniques for the burrowing nematode, Radopholus gracilis, in Florida (PDR 41: 600).

A. L. Taylor and others described a new technique for preliminary screening of nematocides in the laboratory. Tests are reproducible within reasonable limits and comparisons with standard chemicals can be made (PDR 41: 530).

R. P. Esser described an improved technique for handling nematode samples from Baermann funnels (PDR 41: 269).

B. B. Stoller described a method of separating and concentrating nematodes from field samples. He remarked that since nematodes destroy an estimated 10 percent of the nation's crop annually, it is to be expected that considerable effort would be spent in developing tests for detecting, separating, and concentrating nematodes in soil samples (PDR 41: 531).

G. K. Parris reported that the cause of decline of turf grass, ornamentals, cotton, and pecan in Mississippi is often demonstrated to be due to attack by plant endo- and ectoparasitic nematodes, including Tylenchorhynchus spp., Trichodorus spp., Rotylenchus spp., Criconemoides spp., Hoplolaimus spp., Xiphinema spp., Paratylenchus spp., and Pratylenchus spp. (PDR 41: 705).

John P. Hollis has given specifications for ideal nematocides (PDR 42: 291).

D. Davis and S. Halmos reported the effect of gibberellin on plant disease (PDR 41: 890).

DISEASES OF CEREAL CROPS

Results of the 1956-57 small grain disease surveys in South Carolina were reported by R. W. Earhart (PDR 41: 863).

Diseases of small grains observed in Georgia during the 1956-57 season were reported by Luther L. Farrar and U. R. Gore (PDR 41: 986).

C. O. Johnston and M. D. Huffman pointed out evidence of local antagonism between the organisms causing oat crown rust, Puccinia coronata var. avenae, and wheat leaf rust, P. recondita (P. rubigo-vera tritici) (Phytopath. 48: 69).

H. H. McKinney described a method for maintaining soil-free naturally infectious cultures of soil-borne viruses of wheat mosaic and of oat mosaic (PDR 41: 254). McKinney and others reported that studies on natural inoculation with soil-borne wheat and oat viruses and on chemical control and carry-over suggest a microscopic soil inhabitant as vector for these viruses (PDR 41: 256).

Strains of the cereal yellow-dwarf virus, differentiated by means of the apple-grain and the English grain aphids, were reported by H. V. Toko and G. W. Bruehl (Phytopathology 47: 536).

The host range of two strains of the cereal yellow-dwarf virus was reported by G. W. Bruehl and H. V. Toko (PDR 41: 730).

Thomas C. Allen Jr. reported that barley yellow dwarf virus is widely distributed. Since it has been described so recently only a limited amount of research has been done to determine the presence of strains of this virus. Upon inoculation of 31 cereal varieties with barley yellow-dwarf isolates, varietal differences in symptom expression were noted. The capacity of the virus to cause stunting and discoloration of the hosts was used to differentiate strains. No evidence of natural mixtures was found in the 16 strains described (Phytopath. 47: 481).

D. M. Stewart and others reported physiologic races of Puccinia graminis in the United States in 1957. Twenty-seven races and subraces of wheat stem rust (Puccinia graminis var. tritici) were identified in 1059 isolates obtained from 668 uredial collections. Race 15B comprised 32 percent of the isolates. From 415 collections of oat stem rust (P. graminis var. avenae), 522 uredial isolates were identified. Race 7 comprised 59 percent of the isolates. A new subrace, provisionally designated as 13A, was isolated from a uredial collection made in New York. This is the most virulent culture of oat stem rust now known in the United States and can attack commercially grown varieties of oats with all three types of stem-rust resistance (PDR 42: 881).

S. M. Pady and C. O. Johnston reported cereal rust epidemiology and aerobiology in Kansas in 1957. The long, cool, moist spring of 1957 in Kansas was marked by the third heaviest recorded epiphytotic of leaf rust (Puccinia recondita) and by moderately heavy infections of stem rust (P. graminis tritici) of wheat and crown rust (P. coronata) of oats. Stripe rust (P. striiformis) was found on Kansas wheat for the first time in history. Heavy spore showers, frequent rains, and favorable temperatures resulted in extensive rust development with leaf rust causing an estimated loss of 10 percent, stem rust of wheat 3 percent, crown rust of oats 5 percent, and stem rust of oats 1 percent (PDR 42: 726).

Laurence H. Purdy reported results of seed treatment tests using some of the new fungicides for control of oat loose smut (Ustilago avenae) and barley covered smut (U. hordei) in in the Pacific Northwest (PDR 42: 233).

Nematode genera found in the vicinity of small grain roots in Georgia were listed by L. L. Farrar. Pratylenchus sp. was most frequently observed (PDR 41: 703).

AVENA SATIVA. OATS: S. S. Ivanoff and others reported oat diseases in Mississippi. Fungus diseases on oats in Mississippi developed to unprecedented proportions during the 1956-1957 season, as a result of very favorable conditions of temperature, moisture, and relative humidity (PDR 42: 520).

In the Florida Agricultural Experiment Station nursery at Quincy, H. H. Luke and others reported that heavy infection of oats by Erysiphe graminis var. avenae did not severely reduce grain yield when the attack was arrested by hot weather before the early heading stages. Forage yield, however, was reduced by 40 to 50 percent. All Red Rustproof types proved highly resistant; Victorgrain appeared to carry one or more genes for resistance (PDR 41: 842).

Puccinia coronata var. avenae, crown rust, over the years has been the most serious disease of oats in the major oat growing regions in the United States, and the only practical means of control has been through the development of resistant varieties. Landhafer races of crown rust were widely reported in 1957, according to M. D. Simons and others, who discussed sources and means of developing resistance to meet the potential threat (PDR 41: 964). M. D. Simons described four new races of crown rust and listed the races identified in the United States in 1957 (PDR 41: 970).

Puccinia graminis var. avenae, stem rust. J. A. Browning reported that eight strains from the World Collection of Oats appeared to be new sources of resistance to the common oat stem rust races 7, 7A, and 8, and also to the rare but potentially important races 6 and 13A. The combined resistance of these oat strains to these five races indicated they may contain one or more new genes for stem rust resistance (PDR 42: 948).

A. L. Hooker compared various techniques for inoculating oat plants with Septoria avenae and described methods of measuring varietal reaction to infection (PDR 41: 592). Three hundred sixty-one oat varieties or new experimental selections were artificially inoculated with S. avenae in replicated experiments at Madison, Wisconsin in 1957, according to A. L. Hooker. The oat strains varied widely in degree of infection. Several had low disease scores (PDR 42: 20).

Red leaf (virus). A new oat disease called red leaf has appeared recently in Maine and threatens to become a major problem in oat production, according to C. A. Blackmon. Grain yield and quality are adversely affected when the plants are infected in early stages of growth. None of the old or new varieties grown in Maine appear resistant to the disease. The virus is transmitted by the apple-grain aphid (Rhopalosiphum prunifolia) to oats, barley and wheat. Other insects transmitting this disease are corn aphids, English grain aphids, grass aphids and greenbugs (Maine Farm Research 5(2): 18. July 1957).

R. W. Earhart reported that "yellow chlorosis" was found in seven of the Piedmont Counties of South Carolina. The leading variety currently being grown in the State appears to be peculiarly susceptible to this particular chlorosis (PDR 42: 279). According to W. P. Byrd, R. W. Earhart, and E. B. Eskew the cause has not been determined. Under greenhouse conditions they reproduced the symptoms by growing susceptible oat plants in soil that had been artificially infested with Helminthosporium spp. isolated from plants showing this particular chlorosis (PDR 42: 517-520). A similar chlorosis, reported from Georgia under the name "yellow leaf" by L. L. Farrar and U. R. Gore, was considered to be due to a virus (PDR 41: 986-987).

HORDEUM VULGARE. BARLEY: Ustilago nuda, loose smut. J. G. Moseman and D. A. Reed studied the effects of vernalization on the incidence of loose smut on different varieties of barley (PDR 42: 744).

At Kansas State College, R. E. Hampton and others described a method for determining the presence of the stripe mosaic virus in barley seed lots by means of greenhouse testing under optimum temperatures and light intensities for symptom expression. The technique described would be satisfactory for the elimination of heavily infected seed lots during certification (PDR 41: 735).

ORYZA SATIVA. RICE: E. P. Van Arsdel and others reported that the use of colored smoke to indicate movement of air in a rice paddy offered considerable promise in relating the spread of fungus spores to paths of air movement (PDR 42: 721).

Piricularia oryzae, blast. R. J. Volk and others reported results of a quantitative study of the relationship between the silicon content of leaves of Caloro rice and their susceptibility to infection by P. oryzae. They found silicon content and susceptibility to be related inversely. The susceptibility of each leaf is greatest as it emerges; with advancing age the susceptibility diminishes until virtually complete resistance is attained. Both the silicon content and the degree of susceptibility of the leaf at any moment are related to the amount of silicate in the roots. (Phytopath. 48: 179). V. E. Green, Jr. reported observations on fungus diseases of rice in Florida 1951-1957. He stated that of the fungus diseases affecting rice in Florida during the past 7 years, only blast was serious (PDR 42: 624).

R. P. Kahn and J. L. Libby reported the effect of environmental factors and plant age on the infection of rice by Piricularia oryzae. Greenhouse-grown plants were more susceptible than field-grown plants of the same age (Phytopath. 48: 25).

SORGHUM spp. SORGHUM: R. W. Leukel and O. J. Webster summarized results of the 1957 sorghum seed-treatment tests (PDR 41: 992).

Sphacelotheca sorghi, kernel smut. C. H. Hsi reported that although studies have repeatedly shown that environmental conditions influence infection of sorghum by the covered-kernel smut fungus during the pre-emergence period, the relationship between post-emergence conditions and infection is as yet insufficiently understood. Under drouth conditions in eastern New Mexico in 1953, the time of post-emergence irrigation was observed to have affected the amount of infection. Early irrigations resulted in considerably more disease than did late irrigations. High temperatures following planting resulted in less smut than did moderate temperatures, regardless of soil-moisture conditions existing before or after emergence (Phytopath. 48: 22).

TRITICUM AESTIVUM. WHEAT: H. R. Powers, Jr. studied conditions associated with the unusually severe attack of powdery mildew, Erysiphe graminis f. sp. tritici, on winter wheat in the Southeast during 1956-57 (PDR 41: 845).

Circumstances accompanying unusual prevalence of stripe rust, Puccinia striiformis (P. glumarum) on wheat, from south to north in the Great Plains region including even some States where it had not been noticed previously, are described in reports by M. C. Futrell, from Texas; H. C. Young, Jr. and L. E. Browder, Oklahoma; S. M. Pady and others, Kansas; J. M. Daly, Nebraska; J. G. Hennen, South Dakota; E. A. Lungren, Colorado; and J. R. Vaughn, Wyoming (PDR 41: 955).

In Colorado, L. J. Petersen and others pointed out that the collection of urediospores of Puccinia graminis tritici, P. recondita, and other rusts in adequate quantities frequently presents a problem to plant pathologists. They described two spore collecting devices: one, a wheel-mounted, gasoline-powered pump unit, the other, a portable electric vacuum cleaner unit powered by two flash light batteries. These are capable of collecting several hundred milligrams of urediospores per hour (PDR 41: 973). In the October 1957 report of the Plant Disease Warning Service it was noted that cereal rusts were becoming established in parts of the southern United States and northern Mexico. These infections result from spores blown southward from the spring wheat area of the United States and Canada and from any rust which survived the hot, dry summer months in these southern regions. From these early infections on volunteer cereals, the rusts could spread to recently emerged seedlings of the 1958 crop and to susceptible wild grasses. Those infections surviving the winter would provide rust inoculum for northward spread by spring winds.

Puccinia graminis tritici, stem rust. Infection type reaction of several wheat varieties to stem rust was altered by spraying with DDT, in experiments discussed by K. R. Bromfield and R. G. Emge in Maryland (PDR 42: 354). R. G. Hacker and J. R. Vaughn reported on 1957 field tests of cycloheximide derivatives for control of black stem rust at the Wyoming Experiment Station. The tests resulted in excellent control, with mean yields as much as 60 percent higher than those of non-treated checks. The degree of control was related directly to the amount of material applied (PDR 42: 609).

Puccinia recondita (P. rubigo-vera tritici), leaf rust. In 218 collections of this pathogen on wheat received at the Kansas Agricultural Experiment Station in 1956 from 22 States, 23 races were identified. Physiologic race 122 was the most abundant and widely distributed race, displacing race 5 which had been most prevalent for many years. Races 11 and 1 were the most important ones in the northwestern area, and race 11 was also abundant in Texas. As usual, race 58 was the most abundant one in the area around the Great Lakes (C. O. Johnston, PDR 41: 853).

According to W. C. Haskett and C. O. Johnston, one or two spray applications of certain fungicides reduced infection by both leaf and stem rust of wheat in experiments conducted in Kansas during a 3-year period. Fungicides are not recommended for large scale control but could be used to protect seed wheat fields (PDR 42: 5).

In Illinois, H. M. Hilu and Wayne M. Bever reported inoculation, oversummering, and suscept-pathogen relationship of Septoria tritici on Triticum species (Phytopath. 47: 474).

Laurence H. Purdy summarized the 1957 seed treatment tests for control of common bunt (Tilletia caries and T. foetida) of winter wheat in the Pacific Northwest for the year 1957. Relatively good control of seed-borne and soil-borne common bunt was obtained in all tests with the HCB formulations and in three of the five types of tests with PCNB (PDR 41: 976). In the Pacific Northwest, E. L. Kendrick and C. S. Holton reported that pathogenic specialization in Tilletia caries and T. foetida is the major factor contributing to the problem of controlling smut by growing resistant varieties. Upwards of 500 collections of smut, representing 3 crop years, were tested during the period 1954 through 1957, and only two new races were identified (PDR 42: 15).

Tilletia contraversa, dwarf bunt, in winter wheat occurs sporadically in almost all of the wheat-growing areas of the Pacific Northwest. The soil-surface application of hexachlorobenzene in localized areas of heavy infestation has been found to control dwarf bunt of winter wheat effectively, particularly if the application is made 4 weeks after emergence, according to L. H. Purdy (PDR 41: 916).

In Indiana, a culture of loose smut (Ustilago tritici) maintained at Purdue University since 1938 is distinct from the previously described races. T. A. Gaskins and others have designated this race 20. Because of its narrow host range, this race is not of economic importance (PDR 41: 975). In Texas, D. E. Weibel reported studies on the control of loose smut of wheat (PDR 42: 737).

Viruses. A. H. Gold and others concluded that the electron microscope is an important aid in determining virus relationships in wheat and other monocots (PDR 41: 250).

Barley stripe mosaic (virus). T. J. Army and others compared the phosphorus content of healthy plants with that of plants infected with the barley stripe mosaic in eight spring wheat varieties in Montana (PDR 42: 747).

Mosaic (virus). W. H. Sill, Jr. and C. L. King reported an epiphytotic of soil-borne wheat mosaic in winter wheat in Kansas. Approximately 347,000 acres of wheat were diseased. Estimated losses were 2,082,000 bushels, worth approximately $3,950,000. Estimates of loss in diseased fields varied from 5 to 12 bushels per acre. In all tests in infested soil the highly resistant variety Concho was first in yield even though badly lodged (PDR 42: 513).

Wheat streak mosaic (virus). G. W. Bruehl and H. H. Keifer, reporting observations on this disease, stated that its erratic appearance in Washington over a wide area indicated the existence of an unknown grass host (or hosts) where the virus and the mite persist in trace amounts. So far this disease has been of minor importance, but its existence in the State poses a constant threat. The ability of the mite to "come from nowhere" and thoroughly infest and infect 180 acres of wheat, as in Spokane County in 1957, illustrates the potential danger from wheat streak mosaic in Washington (PDR 42: 32).

ZEA MAYS. CORN: In North Carolina, as a result of germination tests, T. E. Smith and J. P. Bailes found that the rolled-towel cold test method was valuable in estimating seed corn vitality (PDR 42: 734).

At the University of Wisconsin, captan proved superior to arasan for corn seed treatment in tests reported by Paul E. Hoppe (PDR 41: 857).

In Minnesota, J. E. DeVay and others reported methods of testing for disease resistance in the corn disease nurseries at St. Paul and gave results of comparisons of 110 lines of corn for resistance to diseases important in the North Central Region (PDR 41: 699).

In experiments conducted at Madison, Wisconsin in 1957 Paul E. Hoppe investigated correlation between germination obtained in laboratory cold tests of seed corn and the subsequent stands in the field. The results showed a high correlation between laboratory and field results, provided further evidence that laboratory cold tests enable the detection of inferior seed quality that is not so apparent in standard germination tests, and indicated exceptional field responses to good seed treatment (PDR 42: 367).

Bacterium stewartii, bacterial wilt. In J. J. Natti's trials of seed treatment with various antibiotics to control bacterial wilt of corn no material gave effective control without causing injury to seedlings (PDR 42: 953).

A bacterial stalk rot (Erwinia sp.) has been observed following extensive overhead irrigation of corn at several locations in North Carolina, according to Arthur Kelman and others. The causal organism can also cause a pith decay of tobacco, soft rot of potato tubers, carrots, squash, cucumbers, cabbage and onions (PDR 41: 798).

Merle E. Michaelson reported that stalk rot of corn caused by Diplodia zeae and Gibberella zeae reduced yielding ability of corn from 3 to 18 percent over a 3-year period. Yields varied with the variety of corn, the pathogen, the number of infections, the part of plant infected, and the year. Stalk rot was greater in smutted plants and in plants with leaves removed prior to inoculation than in the controls. There was more rot in corn grown in the greenhouse at 85° than at 65°F. Corn was most susceptible to stalk rot when inoculated just before time of pollen production and thereafter (Phytopath. 47: 499).

Helminthosporium spp., leaf diseases. In Indiana, P. R. Jennings and A. J. Ullstrup made a histological study of three leaf diseases of corn caused by species of Helminthosporium that occur throughout most of the eastern half of the United States as well as in other corn-producing areas of the world. Northern corn leaf blight, Helminthosporium turcicum, and southern corn leaf blight, Cochliobolus heterostrophus (H. maydis), are of appreciable economic importance. Race I of H. carbonum, which causes Helminthosporium leaf spot, is the most virulent of these pathogens, but it is of minor practical consequence because only a few inbred lines are susceptible and resistance is governed by a single dominant gene (Phytopath. 47: 707).

Helminthosporium maydis, southern corn leaf blight, became abundant in localized areas in south central Indiana by August 15. In early September the disease was found 25 miles north of Lafayette, which is the northernmost point that the disease has ever been observed to occur naturally in the State (A. J. Ullstrup, PDR 42: 373).

Helminthosporium turcicum, northern corn leaf blight, was widely distributed in southern Indiana by the first week in September. Observations in some of the same fields made in early October showed a marked increase in severity of the disease. This probably had little effect on the yield, since most corn was fully mature by the end of September (A. J. Ullstrup, (PDR 42: 373).

Puccinia polysora, southern corn rust, was present in four counties in Indiana in 1957. This report made by A. J. Ullstrup is the second of the occurrence of southern rust in Indiana and the first record of the development of the telial stage of the fungus in the State (PDR 42: 373). This rust on field corn was found for the first time in the Everglades area of Florida in May 1957. Above normal rainfall and high temperatures during April and May in the Belle Glade area produced favorable conditions for its development in 1957 (PDR 41: 856). During the summer of 1957 field corn specimens infected with P. polysora were sent in from Poinsett and Crawford Counties in Arkansas. Identification of the rust as P. polysora was made by George B. Cummins of Purdue University. Judging from the location of the counties in which it was found and other observations on prevalence of rust on corn throughout the State it is likely that P. polysora was rather widely distributed within the State (J. L. Dale, PDR 42: 402).

R. R. Nelson's investigations on the growth and development of witchweed (Striga asiatica) indicated that soil type and soil temperature will be among the important limiting factors in the potential spread of this phanerogamic parasite (PDR 42: 152).

Ustilago maydis, smut. An estimate of the incidence of corn smut and of the effects of the disease on yields in Indiana in 1957 was reported by T. A. Gaskin and A. J. Ullstrup. Incidence was judged to be average or slightly less than average. An estimated loss of 0.41 percent in a 230-million bushel crop, would amount to about 943 thousand bushels (PDR 42: 374).

ZEA MAYS var. SACCHARATA: SWEET CORN: Bacterium stewartii, bacterial wilt. Streptomycin, Terramycin, tetracycline, indoleacetic acid, 2, 4, 5-trichlorophenoxyacetic acid, and sodium borate applied in water solutions or suspensions to Golden Bantam sweet corn seeds reduced the severity of Stewart's bacterial wilt on the subsequent seedlings. Generally, the most effective concentrations in reducing wilt produced phytotoxic symptoms on the seedlings (L. E. Williams, PDR 41: 919).

Pythium graminicola obtained from diseased roots of Wisconsin 23 sweet corn grown in southern California caused a root rot on five varieties of sweet corn in greenhouse experiments. In the field root rots occurred primarily on the early-maturing varieties when grown in late summer. (D. C. Erwin and J. W. Cameron, PDR 41: 988).

Wheat streak mosaic (virus) was reported to have occurred in epiphytotic proportions in sweet corn in southwestern Idaho. Tests of selected strains of the F_1 hybrid Golden Cross Bantam and related inbreds revealed a wide variation in susceptibility. It seems probable, therefore, that resistant strains can be developed, according to A. M. Finley (PDR 41: 589).

DISEASES OF FORAGE AND COVER CROPS

Observations reported by E. A. Curl and H. A. Weaver indicated that sprinkler irrigation favors occurrence of diseases of forage crops in the Southeast (PDR 42: 637).

A survey was made of winter-injury to forage crops in Alaska and Yukon in 1956, according to J. B. Lebeau and Charles E. Logsdon. The low-temperature pathogens isolated were Sclerotinia borealis, Plenodomus meliloti, Typhula idahoensis and an unidentified basidiomycete, the principal snow-mold pathogen in western Canada. This basidiomycete had not previously been found elsewhere. Many additional organisms were noted, including several Fusarium spp. Much of the winter-killing of herbaceous plants in Alaska and Yukon was caused by these fungi, but it was noted that Medicago falcata survived the winter conditions better than any other forage crop (Phytopath. 48: 148).

Nematodes associated with Minnesota crops, identified from soil samples from fields of alfalfa, flax, peas, and soybeans, were reported by D. P. Taylor and others. Most commonly identified were species of the genera Xiphinema, Tylenchorhynchus, Helicotylenchus, Paratylenchus, and Pratylenchus. In addition nematodes of the genera Aphelenchoides, Aphelenchus, Criconemoides, Ditylenchus, Heterodera, Hoplolaimus, Meloidogyne, Boleodorus, Neotylenchus, Nothotylenchus, Psilenchus, Rotylenchus, Trichodorus, and Tylenchus, were found (PDR 42: 195).

GRASSES

Wild grasses as possible alternate hosts of "hoja blanca" (white leaf) disease of rice were reported by V. E. Green, Jr. and J. R. Orsenigo in Florida. Symptoms were noted particularly in Echinochloa crusgalli, E. colonum, E. walteri, Brachiaria plantaginea, Panicum capillare; Oryza sativa (var. red rice), and were especially conspicuous in Sacciolepis striata (PDR 42: 342).

In Pennsylvania, Samuel W. Braverman reported leaf streak, due to Scolecotrichum graminis, of orchardgrass, Dactylis glomerata, timothy, Phleum pratense, and tall oatgrass, Arrhenatherum elatius. This organism causes a foliar disease of numerous grasses throughout the United States, South America and Europe. Several experiments involving cross inoculations to orchardgrass and timothy indicated that S. graminis from orchardgrass is pathogenic only to that host whereas S. graminis from timothy is pathogenic to both orchard grass and timothy (Phytopath. 48: 141).

At the Washington State College a host range study of two Washington strains of cereal yellow-dwarf virus showed that many grasses are hosts, but that considerable variation in host range exists, both between the Washington strains and in comparison with the host range reported in California. Examples of these variations in host range are smooth brome (Bromus inermis), immune to both Washington strains, susceptible in California; timothy (Phleum pratense), susceptible to both Washington strains, immune in California; and Poa spp., susceptible to one Washington strain, immune to the other (G. W. Bruehl and H. V. Toko, PDR 41:730).

DIGITARIA SANGUINALIS. CRABGRASS: Ustilago syntherismae, smut. Plants of large crabgrass were observed to be infected with this smut at several locations in Indiana. Timothy A. Gaskin investigated the life cycle of the fungus and described the disease symptoms on the crabgrass (PDR 42: 735).

PASPALUM DILATATUM. DALLISGRASS: Claviceps paspali, ergot, is an omnipresent disease of Dallisgrass in the South, according to Homer D. Wells and others. It is a limiting factor in the commercial production of Dallisgrass seed in the United States. Burning dormant Dallisgrass stubble seems to be effective for inactivating ergot sclerotia. This should aid in producing an early seed crop of Dallisgrass in the southeastern United States (PDR 42: 30).

POA PRATENSIS. BLUEGRASS: Helminthosporium sativum was found to be the principal disease organism affecting bluegrass turfs in eastern Nebraska in 1956. The symptoms of the disease were found to vary greatly with temperature and moisture. Results from greenhouse studies and the findings from surveys of diseased lawns suggest that control might be gained through fungicidal sprays and employment of those cultural operations that permit the greatest amount of drying of the foliage without being harmful to the maintenance of a fine turf (Phytopath. 47: 744).

STENOTAPHRUM SECUNDATUM. ST. AUGUSTINE GRASS: Piricularia grisea, gray leaf spot, is very destructive in Florida during the summer months, particularly during periods of heavy rainfall and high humidity, according to Isaac Malca M. and J. H. Owen (PDR 41: 871).

LEGUMES

CORONILLA VARIA. CROWN VETCH: Cercospora rautensis. During June 1957, many fungi, including some pathogens, were found to be associated with crown vetch in central Pennsylvania. Cercospora appeared to be the most damaging. The species was tentatively identified as C. rautensis (J.H. Graham & K. E. Zeiders, PDR 41: 925).

CROTALARIA SPECTABILIS. RATTLE-BOX: In Florida, H. W. Ford and Chancellor I. Hannon questioned the advisability of using C. spectabilis as a cover crop in the burrowing nematode (Radopholus similis) eradication program because it was found to harbor the nematode (PDR 42: 461).

GLYCINE MAX. SOYBEAN: K. W. Kreitlow and others compiled a bibliography of viruses infecting soybean (PDR 41: 579).

Corynespora cassiicola, root and stem rot, was found to cause a previously undescribed disease of soybean in Nebraska in 1954. Field surveys and experiments suggested that a soil temperature above 19° to 21°C arrests the development of the disease before it causes any appreciable damage. The pathogen overwinters on infected roots and stems and can survive in infested, unsterilized soil for at least 2 years. Incidence was highest in fields where soybean had been planted for 2 successive years (M. G. Boosalis and R. I. Hamilton, PDR 41: 696).

Heterodera glycines, soybean cyst nematode, has been found in six States. Since this nematode threatens soybean production in infested areas, resistance to it would be of great value to growers, according to J. P. Ross and C. A. Brim. During the spring of 1957 approximately 2800 selections and varieties of soybean were evaluated for resistance by means of a double-row planting method. The results indicated that resistance to the soybean cyst nematode is available within our present soybean germ plasm (PDR 41: 923).

S. G. Lehman reported that four new races of the downy mildew fungus (Peronospora manshurica) were obtained from collections of infected soybean seed harvested in North Carolina. The new races are designated 3A, 5, 5A, and 6. The reaction of 37 varieties of soybean to each of these new races was determined (Phytopath. 48: 83).

Bud blight caused by tobacco ringspot virus. Ringspot was transmitted from tobacco to soybean and from soybean to soybean by Melanoplus differentialis and by a mixture of M. mexicanus and M. femur-rubrum. The length of time the grasshoppers fed on healthy soybean plants had a marked effect on percentage of plants infected. Because of their feeding habits and the manipulation necessary to obtain 1.2 percent infection of soybean plants, grasshoppers are not considered to be important vectors of tobacco ringspot (J. M. Dunleavy, Phytopath. 47: 681).

John Dunleavy reported that a previously undescribed virus disease, similar to bud blight, was observed on soybean in 1955 and 1956. Cross-protection tests and a study of host range showed that it was not due to tobacco ringspot virus. The virus occurred on Setaria viridis and Melilotus alba near fields with infected soybean plants. Its host range was the same as that of cucumber mosaic-virus, with the exception of certain members of the Leguminosae, when tested on 28 genera of plants in 12 families. The virus was transmitted through seed of soybean in three separate tests (Phytopath. 47: 519).

LOTUS CORNICULATUS. BIRDSFOOT TREFOIL: Charles R. Drake reported diseases of birdsfoot trefoil observed in six southeastern States in 1956 and 1957. Rhizoctonia foliage blight proved the most damaging (PDR 42: 145).

LUPINUS spp. LUPINES: According to M. K. Corbett, the principal virus disease of blue, yellow and white lupines grown for seed and forage in the southeastern United States is caused by strains of bean yellow mosaic virus. The main field sources of the virus in northern Florida are the sweetclovers that grow as perennials (Phytopath. 48: 86).

LUPINUS ANGUSTIFOLIUS. BLUE LUPINE: The discovery of resistance to the gray leafspot disease (Stemphylium solani) in strains of blue lupine was reported by Ian Forbes, Jr., and others. An artificial greenhouse inoculation technique is described which appears to be satisfactory for use in breeding forage varieties carrying resistance to gray leafspot (PDR 41: 1037).

MEDICAGO SATIVA. ALFALFA: Kirk L. Athow reported that the seedling stands from Arasan-treated and untreated seed of 64 lots of alfalfa and 61 lots of red clover were compared in field plantings. The stands of approximately 14 percent of the alfalfa lots and 5 percent of the red clover lots were significantly increased by seed treatment. Lots germinating poorly were benefited no more than were the better germinating lots. The highest yields were usually obtained at the heavier seeding rates (Phytopath. 47: 504).

Observations on the influence of weather conditions upon severity of some diseases of alfalfa and red clover were reported by D. A. Roberts. Black stem, Ascochyta imperfecta, and northern anthracnose, Kabatiella caulivora, caused relatively heavy losses of first-harvest hay in central New York when rainfall during the preceding autumn had been adequate to insure abundant production of inoculum, when at least 0.01 in. of rain fell during each of 18 days in May, and when mean temperatures were near or above normal during March, April and May. These diseases caused relatively little crop loss if there had been no more than 12 days in May with measurable rainfall, even when other conditions favored disease development. When mean temperatures were not higher than 28°, 41°, and 51°F in March, April, and May, respectively, the Pseudopeziza leafspots of both alfalfa and red clover were particularly mild, and none of the four diseases studied was very destructive (Phytopath. 47: 626).

Ditylenchus dipsaci, stem nematode, is a serious pest of alfalfa in many of the irrigated valleys of the Pacific coast and intermountain areas of the West. Damage to alfalfa by this nematode varies from year to year, but it always curtails production of hay. Severe infection often causes death of the plants. Varietal reaction was noted (O. F. Smith, Phytopath. 48: 107).

Severe damage from bacterial stem blight (Pseudomonas medicaginis) occurred in Missouri, apparently following frost injury from a statewide late freeze, April 11-14, 1957 (M. D. Whitehead and E. L. Pinnell, PDR 41: 876).

"Alfalfa dwarf" or "Pierce's disease of grape" (virus). See under VITIS spp., GRAPE.

TRIFOLIUM PRATENSE. RED CLOVER: C. M. Leach reported sclerotia of Typhula trifolii, a parasite of grasses, found mixed with Idaho-grown seed of Trifolium pratense. It is possible that the sclerotia were threshed from grasses growing with the clover (PDR 42: 383).

Five physiologic races of Uromyces trifolii var. fallens were distinguished in collections from 14 locations in the northern United States. This constitutes the first record of physiologic specialization within U. trifolii var. fallens. Individual red clover plants were used as differentials to separate races after it was determined that commercial varieties were unsuitable for this purpose. The varieties Common Oregon and Purdue were completely susceptible to the four races tested on them, whereas Altaswede, Pennscott, and several other varieties were heterogeneous for resistance and susceptibility (R. T. Sherwood, Phytopath. 47: 495).

Effect of seed treatment and weather conditions upon severity of some red clover diseases, see under alfalfa.

TRIFOLIUM REPENS var. LADINO: LADINO WHITE CLOVER: R. A. Kilpatrick reported the fungi isolated from Ladino white clover seeds in New Hampshire. The objectives of this study were to determine the fungi associated with insect-injured seeds, and the kinds and relative prevalence of fungi isolated from Ladino white clover seeds harvested from plants heavily infected with different leaf and petiole diseases (PDR 42: 142).

Marmor trifolii, red clover vein mosaic virus. Symptoms produced in Ladino clover and in other susceptible legumes by one virus from Ladino clover in New York indicated that it is the red clover vein mosaic virus. This apparently is the first report of the natural occurrence of this virus in Ladino white clover (D. A. Roberts, PDR 41: 928).

K. W. Kreitlow and others reported the effect of virus infection on yield and chemical composition of Ladino clover. Greenhouse and field data indicated that virus infection could reduce the yielding ability of Ladino clover from 23 to 55 percent. More detailed chemical analyses are necessary to determine the effect of virus infection on various chemical constituents. The need for obtaining resistant plants was stressed (Phytopath. 47: 390).

DISEASES OF FRUIT CROPS

CITRUS spp. CITRUS: L. J. Klotz reported controlling diseases of Citrus and subtropical fruits. Together with some general notes on the preparation of fungicides this article contains a useful table of bacterial and fungus diseases and physiological disorders of citrus, against which sprays are applied in California. Also tabulated are the fungicide formulations, time of application, coverage per tree, and crops involved, including date palm and Fuerte avocado pear (Calif. Citrogr. 42: 220-222, 1957).

Maneb in combination with oil caused severe injury to grapefruit according to F. E. Fisher in Florida (PDR 42: 266).

S. Z. Berry reported results of a quantitative and qualitative study of the effects of a mixture of ethylene dichloride and trichlorethane gas on three citrus fruit pathogens, Diplodia natalensis, Phomopsis citri, and Penicillium digitatum (PDR 42: 102).

A fruit rot was found in Louisiana citrus groves during the late summer and fall of 1957. As far as could be determined, according to N. L. Horn and others, this is the first report of Oospora sp. causing a fruit rot of citrus in the field in Louisiana (PDR 42: 264).

In California, L. J. Klotz and T. A. DeWolfe described techniques for isolating Phytophthora spp., pathogenic to citrus (PDR 42: 675).

W. A. Feder and others reported that nearly 400 varieties, species, and relatives of citrus, screened between 1953 and 1957, were found to be susceptible to damage by the burrowing nematode, Radopholus similis, the primary cause of spreading decline (PDR 42: 934).

L. J. Klotz and others stated that biphenyl vapor controls Rhizoctonia solani, damping-off, of citrus in California but is not useful where other organisms are involved (PDR 42: 464).

Observations reported by B. G. Chitwood and W. Birchfield indicated that several nematodes, including the citrus-root nematode, Tylenchus semipenetrans, found on citrus roots in Florida are native to Florida soils (PDR 41: 525).

Greasy spot, cause not definitely determined, of citrus has now become of economic importance in every citrus-growing area in Florida according to W. L. Thompson and others. Two applications of captan were effective in controlling the disease (Florida Hort. Soc. Proc. 69: 98-104, 1957).

Psorosis (scaly bark). P. W. Moore and Edward Nauer reported that a nine year study of seven older orange orchards indicated that advance of psorosis may be faster than is generally believed. The disease can take a bearing tree out of production faster than replants can be brought into production. The orchards studied were in the Azusa district of Los Angeles County, California (Calif. Agr. 11(6): 11. June 1957).

Stubborn disease of citrus is probably caused by a graft-transmissible virus. Blue albedo has generally been considered to be one symptom of the disease in grapefruit. However, appearance of the symptom during fruit sizing experiments in California, using growth regulator sprays, makes its connection with stubborn disease problematical (J. B. Carpenter and H. Z. Hield, PDR 42: 63).

Tristeza (virus). Injury and loss of citrus trees due to tristeza in an Orange County grove in Florida was reported by M. Cohen (Florida Hort. Soc. Proc. 69: 19-24. 1957). The suppression of tristeza virus symptoms in Mexican lime seedlings by heat treatment was reported by P. R. Desjardins and others in California. Heat treatment at 40° C resulted in the suppression of tristeza symptoms on the leaves that developed during treatment of infected Mexican lime seedlings. Results of similar treatment of healthy seedlings indicated that the increase in growth during treatment of infected plants was due to the effect of the treatment on the virus rather than on the host (PDR 41: 230). The effect of heat treatments on tristeza and psorosis viruses in citrus was discussed by T. J. Grant. Hot water treatments of citrus budsticks infected with tristeza and psorosis viruses have not proved satisfactory for securing virus-free bud sources. Some branches on the new growth that developed during exposure of infected plants in a high-temperature chamber appeared to be free from tristeza and psorosis viruses, even though old leaves and stem tissues of the treated plants still contained virus. (PDR 41: 232).

Seedling yellows and tristeza. In California, seedling yellows virus has not been encountered in sweet orange or other citrus known to have been naturally infected with tristeza (quick decline) virus. Recent studies show that the causal virus of seedling yellows is carried by by plants of Meyer lemon, Satsuma orange, and other citrus varieties known to be infected with tristeza virus and believed to have been cariers of the virus when originally imported to the United States. Work is in progress to determine if the seedling yellows reaction is caused by a virus distinct from tristeza virus, as suggested by Fraser, or if it is a strain of the latter (James M. Wallace, (PDR 41: 394).

Wood pocket. E. C. Calavan reported that wood pocket recurs in lemon and seedless lime trees grown from buds or grafts from diseased sources, but appears to be nontransmissible to healthy trees. It is probably not infectious and may be due to an unstable chimera (variegated sport). Possible relationships to virus diseases were discussed. None except chance association has been found. However, seed-perpetuated pitting suggesting xyloporosis occurs in semi-dense Lisbon seedlings as well as in occasional seedlings from various other lemon sources. Wood pocket generally is most severe in desert areas and least severe in coastal areas. Bacteria and fungi invade lesions but do not cause wood pocket. Control depends on the use of wood pocket-free sources (California Citrograph 42: 300, June 1957).

CITRUS AURANTIFOLIA. LIME: H. J. Reitz and L. C. Knorr reported presence of the Rangpur lime disease in Florida and discussed relationship between the causal virus and the exocortis virus (PDR 41: 235).

CITRUS AURANTIFOLIA X FORTUNELLA spp. LIMEQUAT: A disease of limequat trees characterized by yellowing of the veins of the leaves has been found in California, and described by L. G. Weathers. The causal agent is readily transmitted from citrus to citrus by grafting (PDR 41: 741).

CITRUS SINENSIS. SWEET ORANGE: Bark pitting of sweet orange is not a reliable symptom of the presence of the tristeza virus according to Farid Nour-Eldin and J. F. L. Childs (PDR 41: 1011).

FRAGARIA spp. STRAWBERRY: The strawberry plant certification program in Arkansas was outlined by J. P. Fulton and Carter Seymour. The aim of the program is to make available to growers plants that are free from plant-borne pathogens (PDR 41: 749).

Recent occurrences of summer dwarf (Aphelenchoides besseyi) were recorded in strawberry plantings in Arkansas, according to D. A. Slack and others. Aberrant symptoms of the disease were observed on plants in the field and greenhouse. Field development was most striking during late fall rather than mid-summer. The problem is rather more general than local since diseased plants originated in Arkansas, Tennessee, Oklahoma, Missouri and Maryland (PDR 41: 398).

Observations on the effect of fungicides on gray mold (Botrytis cinerea) and leaf spot (Mycosphaerella fragariae) and on the chemical composition of strawberry plant tissues were reported by R. S. Cox and J. P. Winfree in Florida (PDR 41: 755).

O. D. Morgan and W. F. Jeffers reported effects of fumigation and heat treatments on root knot (Meloidogyne hapla) and black root rot (Pratylenchus sp.) of strawberry (PDR 41: 825).

Results of a survey to determine the prevalence and distribution of nematodes associated with strawberry roots in the United States were reported by A. J. Braun. Pratylenchus spp. were the most prevalent of the parasitic forms. In the southern States Xiphinema, Tylenchorhynchus, and Helicotylenchus were encountered more frequently than other genera (PDR 42: 76).

Mycosphaerella fragariae, leaf spot, in Michigan plantings has been sporadic through the years. However, epidemics may occur, as in 1957. During 1957, several facts were observed about this disease. Many Michigan growers are not familiar with the disease since most of the old major varieties are resistant. Several of the new varieties and selections were evaluated as susceptible. A comparison of temperature and rainfall for the area indicated favorable conditions for an epidemic. A new fungicide, Cyprex (70% n-dodecylguanidine acetate) gave exceptional control while Tri-Basic copper was only partially effective and resulted in some injury (J. H. MacNeil and others, Michigan Quart. Bull 40 (8): 581-588, Feb. 1958). Unusually severe occurrence of strawberry leaf spot in commercial plantings in Arkansas apparently was associated with above-average rainfall early in the season, according to J. L. Dale and J. P. Fulton (PDR 41: 681).

Phytophthora fragariae, red stele. R. H. Fulton reported that several plants of the Fairland variety received for diagnosis showed typical symptoms of the red stele disease. Since Fairland has been considered a red stele-resistant variety it was assumed that a physiological race pathogenic to Fairland was present in the field. This is the first known infection of Fairland by P. fragariae (PDR 42: 71). Under controlled conditions chloropicrin was very effective in eradicating P. fragariae from infested soil, according to W. F. Jeffers in Maryland. Several other fungicidal materials were ineffective. Under field conditions none of the materials tested resulted in complete eradication of the red stele fungus, but methyl bromide and chloropicrin at relatively low rates gave a high degree of control (PDR 41: 415).

Stephen Wilhelm reported a bud rot of strawberry caused by Rhizoctonia solani. The disease, which kills the terminal buds in scattered small or large groups of plants in the winter and spring rainy seasons, has recently been serious on the coast of California. The disease may be spread in infected nursery plants (PDR 41: 941).

In Washington, D. M. McLean reported an unusual occurrence of Sclerotinia sclerotiorum on ripening strawberry fruit in experiment station plots during 1957. This is the first report of the fungus on strawberry fruit in Washington (PDR 41: 1057).

Viruses. P. S. Jorgensen has devised an insert petiole-graft technique for transmission of strawberry viruses. Some viruses that have successfully been transmitted by this method are: the yellow edge component, a virus tentatively identified as mottle, an undescribed virus tentatively named necrotic shock, and complete xanthosis complex from commercial production plantings (PDR 41: 1009).

A screenhouse provides highly satisfactory conditions for the production of virus-free foundation strawberry stocks, according to J. B. Smith and Geo. M. Darrow. They described the plan and its use. About 25 screenhouses are now in use by strawberry plant propagators in the United States (PDR 41: 573).

In Arkansas F. G. Rorie reported investigations which showed that the aphid Capitophorus minor readily transmitted nonpersistent virus isolates from commercial strawberry plants to Fragaria vesca indicator plants. No evidence of transmission of persistent viruses was obtained (PDR 41: 683).

J. P. Fulton reported that aster yellows virus disease is common but not damaging in Arkansas strawberry fields; he described field symptoms of aster yellows and some other conditions that might be confused with it (PDR 41: 521).

MALUS SYLVESTRIS. APPLE: In Maine, M. T. Hilborn and others suggested that under some conditions, sprays combining glyodin and lead arsenate may cause injury such as foliage burning or russetting in McIntosh apple as a result of the upsetting of the iron-manganese ratio in the leaves (PDR 42: 776).

Gloeosporium perennans, the anthracnose fungus, which causes bull's eye rot or target spot of apple fruit, is usually most common in North Central Washington, according to C. C. Chollet and Roderick Sprague. Their experiments indicated that maneb was about as effective as ziram for control and could be used in the same way (PDR 42: 499).

Podosphaera leucotricha, powdery mildew. Roderick Sprague evaluated results of spray trials at Wenatchee, Washington in 1957 (PDR 42: 100). In experiments reported by A. B. Groves and others, it was concluded that control of powdery mildew of apple with Karathane (2-(1-methylheptyl)-4, 6-dinitrophenyl crotonate and isomers) is best achieved with small amounts applied at frequent intervals (PDR 42: 252).

Venturia inaequalis, scab. Cyprex (n-dodecylguanidine acetate) was found by Dwight Powell and others in Michigan to be equally effecitve at all concentrations. It produced 99 percent control as compared with no control on untreated trees. Other materials ranged from 45 to 57 percent effective (PDR 42: 493).

In Missouri, five previously unreported disorders of pome fruits were recorded by A. F. Posnette and D. F. Millikan. These disorders and the virus diseases they resemble are chat fruit, rough skin, and rubbery wood on apple, and vein yellows and red mottle on pears (PDR 42: 200).

PERSEA AMERICANA. AVOCADO: Hot water treatment of infected avocado seeds killed the root rot fungus Phytophthora cinnamomi without injury to the seed in experiments reported by R. D. Durbin and others. Root rot has become the most important disease of this crop in California (PDR 41: 678).

PHOENIX DACTYLIFERA. DATE PALM: Roy W. Nixon observed considerable differences in tolerance of Graphiola leaf spot, Graphiola phoenicis, among date palm varieties in Texas (PDR 41: 1026).

PRUNUS spp. PLUM: J. D. Kirkpatrick and others reported that in a field study of 685 5-year old Stanley plum trees propagated on Myrobalan rootstock (Prunus cerasifera), 190 trees wilted and collapsed or showed stages of collapse during the 1957 growing season. This collapse may be explained by what appears to be differential winter injury to cambium and xylem tissues about the bud union area. It appears that some factor may induce or aggravate susceptibility to winter injury in the tissues in the area of the bud-union (PDR 42: 65).

PRUNUS spp. SWEET AND SOUR CHERRY: Agrobacterium tumefaciens, crown gall. In Oregon, Ira W. Deep reported that pre-planting treatments with the antibiotic preparations streptomycin sulfate, Agri-mycin, and Terramycin were tested for control of crown gall of Mazzard cherry seedlings. All three preparations significantly reduced the incidence of infection, but Terramycin was by far the most effective. Certain non-phytotoxic treatments with Terramycin were significantly more effective than a standard Semesan Bel treatment. Chemotherapeutic activity was indicated since the incidence of infection in the inoculated control was significantly higher than in trees treated in 400 ppm of Agri-mycin for 1 hour (PDR 42: 476).

A new spray material, n-dodecylguanidine acetate (Cyprex), gave good control of cherry leaf spot (Coccomyces hiemalis) in Michigan tests reported by Donald Cation (PDR 41: 1029).

In Oregon, J. A. Milbrath reported midleaf necrosis, a virus disease of cherry. Infected trees were markedly smaller in size and less vigorous than healthy ones, but fruit on them developed normally. An Olivet sour cherry and a Bing sweet cherry were found carrying the midleaf necrosis virus without symptoms. The disease was also observed in commercial sour cherry orchards in Oregon. Cherry midleaf necrosis is proposed for the common name of the disease and cherry midleaf necrosis virus for the causal virus (Phytopath. 47: 637).

J. A. Milbrath also reported the effect of some sour cherry viruses on growth of young orchard trees (Phytopath. 47: 655).

"Pfeffingerkrankheit" or rosette (virus) was reported as a serious orchard problem in sour cherries in Pennsylvania by F. H. Lewis. The symptoms suggest that this is the same disease previously described as rosette in Canada and Pfeffingen disease in Switzerland (PDR 42: 563). Rosette was also reported in West Virginia on sour cherry by R. E. Adams and K. J. Kessler, Jr. (PDR 42: 568).

PRUNUS ARMENIACA. APRICOT: Ring pox (virus). No symptoms of apricot ring pox virus developed on seedlings of Wenatchee Moorpark apricot grown from seed from infected trees at Hemet, California and the virus was not detected in them by indexing (L. C. Cochran and E. C. Calavan, PDR 41: 690).

PRUNUS PERSICA. PEACH: J. C. Dunegan and R. A. Wilson reported evidence indicating that soils treated with DDT lose toxicity for peach trees after some years (PDR 42: 262).

Emil F. Guba summarized several season's observations on the relation between control of peach canker and the infection cycle of the pathogen (Fusicoccum amygdali) (PDR 42: 481).

A preliminary survey of nematodes found on peaches in New Jersey included samples from 19 orchards. The following list shows the nematode genera found and the number of orchards in which they occurred: Pratylenchus 11, Xiphinema 11, Aphelenchoides 5, Ditylenchus 4, Longidorus 2, Tylenchorhynchus 2, Criconemoides 2, Aphelenchus 2, Tylenchus 1, and Hoplolaimus 1 (H. A. Thomas, PDR 41: 526).

Taphrina deformans, leaf curl, was effectively controlled in California by fall applications of ziram and ferbam, in experiments reported by Harley English (PDR 42: 384).

Embryonic abortion (virus). R. E. Adams reported that in the spring of 1957 intensive observations and studies were begun in a planting of Freeland peaches in West Virginia. Despite the young age of this planting it has shown decline, poor yield of marketable fruit, and severe brown rot incidence for several years. This is apparently a new disease of peach. Symptoms observed were described and evidence was presented to show that the disease is transmissible by grafting. The disease was tentatively designated embryonic abortion (PDR 42: 203).

In California, W. H. Keith and J. A. Traylor reported results of some soil treatments for elimination of peach yellow bud mosaic virus from soil (Phytopathology 47: 537).

PYRUS COMMUNIS. PEAR: B. A. Friedman and M. J. Ceponis reported diseases (blue mold (Penicillium), gray mold (Botrytis), and bull's-eye (Neofabraea)) in lots of pears shipped from the Pacific Northwest to New York City (PDR 41: 567).

Erwinia amylovora, fire blight. The active annual fireblight control program in the Medford, Oregon pear growing district paid dividends during the 1957 growing season. Weather conditions were favorable for development and spread of the disease, nevertheless, although fireblight was the most severe it had been for 15 years, the growers' control program prevented what could have been a widespread outbreak. Each year growers are encouraged to remove hold-over cankers whenever noticed, and to apply blossom sprays (C. B. Cordy and I. C. MacSwan, Western Fruit Grower 12: 31, Feb. 1958).

RUBUS spp. BLACKBERRY: Elsinoë veneta, anthracnose, in central Oklahoma was controlled by a single delayed dormant spray (Bordeaux 8-8-100) but neither yield nor fruit size was increased as a result of control (F. B. Struble and L. S. Morrison, PDR 41: 766).

VACCINIUM CORYMBOSUM. HIGH BUSH BLUEBERRY: Monilinia vaccinii-corymbosi, mummy berry, is still considered the most important fungus disease of the cultivated high bush blueberry in Michigan, according to R. H. Fulton. The prevention of apothecial formation from the fallen nummified blueberries effectively controlled the reestablishment of the fungus on young, tender shoots. It was shown that eradicant soil treatments with calcium cyanamid dust were superior to protective foliar spray treatments. Calcium cyanamid (Aero calcium cyanamid 57 percent, special grade), as used in these studies did not injure the plant nor destroy the desired acidity of the soil. (Michigan Quart. Bull. 40(3): 491-497, Feb. 1958).

VITIS spp. GRAPE: Phomopsis viticola, dead-arm. Best control of dead-arm disease of grapevines in California resulted from a dormant spray of sodium arsenite followed by a foliar spray of captan applied to the new growth, according to observations reported by T. S. Pine (PDR 41: 822).

Leaf roll (virus). Fruit and foliage symptoms of grape leafroll indicated that it is identical with the virus disease known for several years in California as White Emperor disease. Symptoms of leafroll are similar to those of brunissure, rougeau, flavescence, and potassium deficiency. The use of virus-infected stocks or buds in propagating new vines appears to be the principal method by which the disease is spread in California (A. C. Goheen, F. N. Harmon and J. H. Weinberger, Phytopath. 48: 51).

Pierce's disease (virus) according to J. M. Crall and L. H. Stover, from extensive tests on Carrignane vines, is a major factor in the decline of bunch grapes in Florida. The vectors Oncometopia undata and also Homalodisca triquetra and H. insolita, separately or together, are more efficient than Carneocephala flaviceps (Phytopath. 47: 518). Wm. B. Hewitt and others reported occurrence of Pierce's disease (virus) in the vicinity of Meridian, Mississippi. In inoculations the virus produced symptoms typical of alfalfa dwarf and of Pierce's disease of grape as they are known in California. The disease was also observed on grape in Alabama and Georgia (PDR 42: 209). According to Hewitt Pierce's disease virus probably is native to the Gulf Coastal Plain areas of the United States (Wm. B. Hewitt, PDR 42: 211).

"Alfalfa dwarf" or "Pierce's disease" (virus). W. N. Stoner reported that in 1956 and 1957 abnormalities were observed in alfalfa and grape in Rhode Island which closely resembled the symptoms induced by infections of the virus Morsus suffodiens. In comparison marked similarities indicated that M. suffodiens may be present in Rhode Island and that a widely distributed leafhopper, Draeculacephala antica, may be an insect vector, should the virus be proven to occur in the State (PDR 42: 573).

DISEASE OF NUT CROPS

P. W. Miller reported the incidence of nut diseases in Oregon in 1957 (PDR 41: 1057).

CARYA ILLINOENSIS. PECAN: R. H. Converse reported that seven protectant spray materials were used in a field test for the control of scab (Fusicladium effusum) on pecan nuts. Dyrene gave excellent control of the disease. None of the five dithiocarbamates tested gave significantly better control than ziram; however, maneb provided somewhat more uniform control than the four other dithiocarbamates (PDR 42: 390).

Evidence for the existence of physiologic specialization in the pecan downy spot fungus (Mycosphaerella caryigena) was reported by R. H. Converse in Oklahoma (PDR 42: 393).

JUGLANS REGIA. PERSIAN WALNUT (ENGLISH WALNUT): P. W. Miller reported recent studies on the effectiveness of Agri-mycin 100 and Agri-mycin 500 for the control of walnut blight (Xanthomonas juglandis) in Oregon. In 1957 the disease was epidemic in many localities (PDR 42: 388).

PRUNUS AMYGDALUS. ALMOND: Pseudomonas syringae, bacterial blast, a newly recognized disease of almonds in the Sacramento Valley, California, was reported by Harley English and others (Phytopathology 47: 520).

DISEASES OF ORNAMENTALS AND MISCELLANEOUS PLANTS

T. A. Gaskin reported weed hosts of Meloidogyne incognita in Indiana (PDR 42: 802).

The effectiveness of Mylone 85W for control of the citrus nematode, Tylenchus semipenetrans, Phytophthora spp., and a number of weeds, when applied with different amounts of water was reported by R. C. Baines and others. Mylone showed good stability in moist soil and moved downward when water was applied at periods up to 72 hours (PDR 42: 876).

In Florida, -Wray Birchfield and H. M. Van Pelt reported results of tests with heat treatments for control of spiral (Helicotylenchus multicinctus) and root-knot (Meloidogyne incognita) nematodes on ornamental plants (PDR 42: 451).

V. H. Young and others reported results of tests for control of root-knot, (Meloidogyne spp.) spiral (Helicolylenchus spp.), and meadow (Pratylenchus spp.) nematodes in potted or-ornamentals with V-C 13 Nemacide (75% of O-2, 4-dichlorophenyl O, O-diethyl phosphorothioate) (PDR 41: 271).

CHENOPODIUM ALBUM. PIGWEED OR LAMB'S QUARTER: Of six selections of this weed tested for susceptibility to the sugar-beet nematode (Heterodera schachtii), one was found to be moderately infected while five were found not to be infected as determined by development of females on the roots. This seems to indicate that there are at least two races of this plant species. Males developed to maturity on five of the selections and were in relatively large numbers on one of these five, suggesting further heterogeneity within these selections (PDR 42: 184).

CHRYSANTHEMUM spp. CHRYSANTHEMUM: Viruses. The use of various varieties of chrysanthemum and of petunia and cineraria as indicator plants to distinguish between eight mosaic and two rosette viruses of chrysanthemum was reported by Philip Brierley and F. F. Smith (PDR 42: 752).

CUSCUTA spp. DODDER: Colletotrichum destructivum on Cuscuta epithymum and C. campestris. In greenhouse tests in Oregon Colletotrichum parasitized both species of Cuscuta, but not alfalfa. According to C. M. Leach this fungus has potentialities for biologically controlling dodder in alfalfa (PDR 42: 827).

GARDENIA AUGUSTA. GARDENIA: A dieback of Belmont gardenias in Pennsylvania greenhouses was described and attributed to root smothering resulting from overwatering (Philip Brierley and Paul Lorentz, PDR 42: 986).

GLADIOLUS spp. GLADIOLUS: R. F. Bozarth and M. K. Corbett stated that identification of the tomato ringspot virus (Annulus zonatus) as the cause of stunt or stub head disease of gladiolus constitutes the first report of natural infection with this virus in Florida (PDR 42: 217).

HYDRANGEA MACROPHYLLA. HYDRANGEA: Philip Brierley obtained virus-free hydrangeas from tip cuttings of heat-treated ringspot-affected stock plants (PDR 41: 1005).

PELARGONIUM spp. PELARGONIUM: In Michigan, A. Kivilaan and R. P. Scheffer reported factors affecting development of bacterial stem rot, Xanthomonas pelargonii. A high percentage of commercially available pelargonium stocks carry this organism in a latent form. Twenty-six percent of 600 plants of six varieties, kept under conditions favoring disease development but precluding disease spread, developed stem rot within 3 months. X. pelargonii did not attack plants outside the geranium family. The disease was favored by high temperatures. Mineral nutrient levels below and above optimum for growth favored disease development (Phytopath. 48: 185).

RHODENDRON spp. AZALEA: Colletotrichum sp. An apparently new leaf-spotting and defoliating disease of azaleas (hybrids of Rhododendron spp.) was described and named "azalea anthracnose". The disease, which affects both the Indica and Kurume groups of azaleas, has occurred in severe epidemics every summer since 1954 in several nurseries in southeastern Louisiana. The cause of the disease was found to be a species of Colletotrichum typical of the conidial stage of Glomerella cingulata. Over-wintered fallen leaves serve as the source of conidial inoculum the following spring and summer. Both copper and organic fungicides were found effective in controlling the disease (P. D. Stathis and A. G. Plakidas, Phytopath. 48: 256).

S. A. Sher reported the effect of nematodes on azaleas. Tylenchorhynchus claytoni, Trichodorus christiei, Tylenchus sp., and Ditylenchus sp. are often found around poorly growing azalea plants in southern California (PDR 42: 84).

ROSA spp. ROSE: G. J. Stessel has given results of tests with eleven fungicides for control of gray mold (Botrytis sp.) in Rhode Island. Effective chemicals were Vancide 51 (sodium dimethyldithiocarbamate), Kromad, and Mycostatin (PDR 42: 396).

In California, S. A. Sher reported a disease of roses caused by a root-lesion nematode, Pratylenchus vulnus (Phytopath. 47: 703).

A. F. Schindler reported poor growth of roses in commercial greenhouse beds infested with the fungus, Lepiota morgani (PDR 42: 713).

VIOLA spp. PANSY AND VIOLET: Colletotrichum violae-tricoloris, anthracnose, is occasionally destructive to pansy and violet, according to P. J. Lloyd and D. F. Crossan. Maneb and zineb at 2 pounds per 100 gallons of water applied as protectants will control the disease. Of eight varieties of pansy and two of Viola cornuta, the Cornuta Chantreyland, a viola variety, showed marked resistance (PDR 42: 86).

DISEASES OF SHRUBS AND TREES

Leaf diseases of trees occurring in Illinois during 1957 were reported by J. M. Ferris and others. Incidence was high because of excessive precipitation and mild temperatures during the spring and early summer (PDR 41: 1051).

Ernest Wright in Oregon reported studies on the influence of temperature and moisture on severity of damping-off caused by Fusarium spp., Pythium ultimum, and Rhizoctonia solani on American elm (Ulmus americana), Siberian elm (Robinia pseudoacacia), and desertwillow (Chilopsis linearis), all of which were found to be susceptible to damping-off (Phytopath. 47: 658).

Ross W. Davidson and Thomas E. Hinds reported that studies of heart rot in mature timber at high elevations revealed several wood-decaying fungi not previously reported as infecting living trees. Corticium radiosum, white butt rot, was most frequently isolated from subalpine fir (Abies lasiocarpa). A brown pocket rot beneath basal wounds in this same species was caused by Helicobasidium corticioides. The most frequently isolated fungus from main stem decay in quaking aspen (Populus tremuloides) was identified as Cryptochaete polygonia. Peniophora luna, which was previously reported as the cause of a top or trunk rot in lodgepole pine (Pinus contorta), fruits abundantly in the areas where this tree grows (Phytopath. 48: 216).

H. H. Thornberry at the University of Illinois reported a method for isolating virus-like particles from woody plants showing symptoms of elm phloem necrosis, peach X-disease, and cherry ring spot (Phytopath. 48: 15).

ACER spp. MAPLE: P. P. Pirone reported that a survey was made to determine the cause of death of more than 300 Norway maples (A. platanoides) and swamp maples (A. rubrum) growing in city streets in New York and Atlantic Highlands in New Jersey, which were thought to have been injured by escaping gas. Sporophores of Ganoderma lucidum were present on the trunk bases or roots of nearly 20 percent of the dead trees, and they were also found on living trees on which the branches above the invaded area of trunk were either dead or bore undersized leaves (Bull. Torrey Bot. Club 84(6): 424-428, 1957).

AGLAONEMA SIMPLEX. CHINESE EVERGREEN: In Florida, glebal masses of Sphaerobolus stellatus on Chinese evergreen foliage prevented sale of the plants, although it was not detrimental to the plants (PDR 41: 537).

ALBIZZIA JULIBRISSIN. MIMOSA: G. F. Weber described seasonal progress of symptoms of mimosa vascular wilt, Fusarium oxysporum f. perniciosum, in Florida. The spread of the disease in the State would be devastating, in view of the current popularity of this conspicuously flowering, rapidly growing tree (PDR 41: 640).

The mimosa tree proved to be susceptible to some species of root-knot nematodes (Meloidogyne spp.) in inoculation experiments conducted by A. F. Schindler in Maryland (PDR 42: 315).

The presence of root-knot nematodes (Meloidogyne spp.) increased incidence of Fusarium wilt (F. oxysporum f. perniciosum) of mimosa trees in experiments reported by D. L. Gill (PDR 42: 587).

CASTANEA DENTATA. CHESTNUT: Recent observations on the American chestnut in North Carolina showed that twigs killed by Endothia parasitica afforded a source of infection of of the young coppice growth. Cankers were formed at the point of contact of the killed twigs and young healthy sprouts. All of several isolations from the margin of infection gave pure cultures of the fungus (W. Birchfield and G. F. Weber, PDR 41: 359).

CASTANEA MOLLISSIMA. CHINESE CHESTNUT: Glomerella cingulata, blossom-end rot, on Chinese chestnut was reported by M. E. Fowler and F. H. Berry. Removal of the infected trees seems to offer the best control for the disease (PDR 42: 91).

CASTANEA PUMILA. ALLEGHENY CHINKAPIN: This native chinkapin and two exotic oak species, Quercus brutia and Q. lusitanica proved to be susceptible when inoculated with the oak wilt fungus(Ceratocystis fagacearum) under nursery conditions (T. W. Bretz, PDR 41: 368).

CRATAEGUS spp. HAWTHORNE: Fabraea maculata, leaf blight. In 1957 the same sprays were applied to the same trees as in 1956 in Pennsylvania. No injury was observed on any variety in 1957. Once again branches of Paul's scarlet hawthorn sprayed with zineb showed only traces of leaf blight while in spite of the extremely dry summer the unsprayed branches were almost completely defoliated (L. P. Nichols, PDR 42: 713).

JUNIPERUS spp. JUNIPER: Phytophthora cinnamomi. In Oregon, there is strong evidence that two varieties of junipers, probably J. sabina tamariscifolia and J. chinensis sargenti, are susceptible to this fungus. (L. B. Loring and Harriet Smithson, PDR 41: 815).

JUNIPERUS VIRGINIA. REDCEDAR: According to F. E. Caveness the root-lesion nematode, Pratylenchus penetrans, was recovered from eastern redcedar in the Nebraska National Forest at Halsey, Nebraska (PDR 41: 1058).

LIQUIDAMBAR STYRACIFLUA. SWEETGUM: E. R. Toole of the Southern Forest Experiment Station reported Botryosphaeria ribis as a cause of twig canker of sweetgum. The fungus, however, appears to be a weak pathogen, and so far seems harmful only to shaded or weakened twigs and branches (PDR 41: 808).

PINUS spp. PINE: Additional studies on the effect of different biocides on growth of seedling pines and on incidence of mycorrhizae were reported by J. G. Palmer and Edward Hacskaylo (PDR 42: 536).

Black root rot (cause unknown). A survey was conducted during the summer of 1956 covering sixteen nurseries in the States of Alabama, Florida, Georgia, Louisiana, Mississippi and North Carolina to determine the prevalence of black root rot in the southern forest nurseries. Root rot was found in four out of sixteen nurseries visited. In one nursery in Mississippi over 40 percent of the seedlings were lost. In another in Louisiana nearly 300,000 seedlings were lost, or approximately 2 percent of the total crop. Fumigation with methyl bromide at several nurseries not only controlled root rot but controlled weeds and increased the size and vigor of the seedlings as well. Vapam also gave good control in test treatments (C. S. Hodges, Jr. Proc. Asso. Southern Agr. Workers, 54th Annual Convention, Birmingham, Alabama, Feb. 1957).

Cold injury. George F. Weber described symptoms observed on young slash pine trees (P. elliotii) in Florida, probably due to cold injury (PDR 41: 494).

Galls, cause unknown. L. I. Cohen and C. W. Waters reported some observations on an undescribed disease of ponderosa pine (P. ponderosa) twigs. Galls growing on ponderosa pine near Missoula, Montana were examined and described (Jour. Forest. 55(7): 515-517. 1957).

Cronartium ribicola, blister rust. D. M. Stewart reported factors affecting local control of blister rust on eastern white pine (P. strobus) in Minnesota (Jour. For. 55 (11): 832-837). Virgil D. Moss found that application of cycloheximide to the surfaces of cuts made when trunk cankers were cut out increased the effectiveness of this excise trunk canker method of controlling blister rust on western white pine (P. monticola). Later he added that fuel oil was found to be a very satisfactory carrier for the cycloheximide (PDR 41: 709, 42: 703).

Fomes annosus, root rot, has been identified as the cause of extensive mortality in a plantation of shortleaf pine (P. echinata) in Washington County, Missouri, where it was first observed in November 1956. Through 1957, about 10 percent of the plantation trees had died and additional losses from this cause can be expected in the future according to T. W. Jones and T. W. Bretz (PDR 42: 988).

Experiments in Louisiana, reported by Thomas Hansbrough and J. P. Hollis showed that soil fumigation to control nematodes in nursery soil improved both yield and quality of loblolly pine (Pinus taeda) seedlings (PDR 41: 1021).

POPULUS DELTOIDES. COTTONWOOD: Cystospora chrysosperma is commonly associated with cottonwoods and willows. In the Great Plains area during the drought years of the mid-thirties, it was particularly abundant on cottonwoods in shelterbelts. Published evidence definitely indicates that C. chrysosperma is not a virulent parasite but attacks trees of declining vigor. Ernest Wright presented observations which tend to confirm this statement (PDR 41: 892).

PSEUDOTSUGA TAXIFOLIA. DOUGLAS-FIR: Cytospora kunzei, pitch-girdle canker, according to Ernest Wright, is a secondary disease that commonly affects conifers weakened by drought, fire, insects, or any unfavorable environmental condition. Precipitation since 1940 has returned to near normal in the eastern Rocky Mountains, and it is thought that pitch-girdle cankers on Douglas-fir are much less common than in former years (PDR 41: 811).

Adelopus gaeumanni and Rhabdocline pseudotsugae causing needle cast, have become a serious problem in Douglas fir plantations in Vermont. The trees are unsightly in spots and would not be acceptable as top quality Christmas trees. Until a control for the diseases is found, it is not advisable to plant Douglas fir in Vermont (W. R. Adams, Vermont Farm and Home Science 3(2): 10-11, October 1957).

QUERCUS spp. OAK: Ceratocystis fagacearum, oak wilt (See also under Castanea pumila). The number of dead oaks occurring in 1572 naturally infected oak wilt sites was contrasted with those occurring in an equal number of randomized, apparently non-diseased, plots. The data are interpreted to mean that, in West Virginia, the finding of two or more dead trees will, in a majority of cases, indicate that the dead trees were killed by oak wilt sometime in the past (W. H. Gillespie and F. W. Craig, PDR 42: 268). A study on the relation of precipitation to mat formation by C. fagacearum reported by John S. Boyce, Jr., showed that in western North Carolina in 1957 a great deal more mat formation occurred on summer-felled trees following a wet autumn than occurred the previous year after a comparatively dry one. It was found that a spray applied about March 15 in western North Carolina would reduce insect infestation of mats during the spring months (PDR 41: 948). Results of transmission experiments conducted under natural forest conditions supported the theory that certain sap-feeding insects are vectors of the oak wilt fungus, C. fagacearum. Three hundred sixty-nine insects were caught in baited traps over wounds on 92 of 235 oak trees located near sources of oak wilt inoculum in the forest. Three of the 92 trees became infected and wilted (PDR 42: 538). The small oak bark-beetle (Pseudopityophthorus minutissimus) has transmitted the oak wilt disease in tests using cages in a nursery in Howard County, Missouri, according to W. B. Buchanan (PDR 41: 546). In Missouri the mortality rate for wilt-diseased trees was greater for red oaks than for white oaks, according to observations reported by T. W. Jones (PDR 42: 552). The length of time to appearance of foliage symptoms of oak wilt was longer in root-inoculated than in trunk-inoculated trees in experiments reported by W. L. Yount in Pennsylvania (PDR 42: 548). J. S. Boyce, Jr. and W. A. Stegall, Jr., reported observations on wilt detection in Tennessee in 1957 (PDR 42: 707). T. W. Bretz and T. W. Jones reported the known distribution of oak wilt in the United States through 1957 (PDR 42: 710).

ULMUS spp. ELM: Ceratocystis ulmi, Dutch elm disease. Man is largely responsible for the long-distance transporting of infested beetles responsible for the spread of the Dutch elm disease in Wisconsin, according to George E. Hafstad (PDR 42: 893). In Maryland, Curtis May, J. G. Palmer and E. Hacskaylo reported in vitro inhibition of C. ulmi by acetone extracts from leaves or stems of some species of higher plants. Acetone extractions were made of the leaves or the stem of 31 varieties and species of shade trees and other plants. Extracts from 21 kinds inhibited growth of C. ulmi, the bio-assay fungus. Extracts from 10 kinds, including Ulmus americana, U. pumila, and U. carpinifolia v. Christine Buisman, lacked an inhibitory fraction (PDR 42: 399).

DISEASES OF SPECIAL CROPS

AGARICUS CAMPESTRIS. MUSHROOM: The fungicide pentachloronitrobenzene (PCNB) at 250 ppm or higher concentration applied 24 hours after casing soil had been put on delays production and limits yield of mushrooms. If the material is applied after harvest of the first break concentrations as high as 1000 ppm do not affect yield adversely (R. N. Goodman, PDR 42: 444).

ARACHIS HYPOGAEA. PEANUT: In Virginia, K. H. Garren and G. B. Duke summarized a 3-year investigation of the effect of various culture methods on the incidence of peanut stem rot caused by Sclerotium rolfsii. The use of two cultural practices resulted in increased yields. There was a consistent inverse relation between stem rot and yield, and it was assumed that these yield increases resulted from control of stem rot (PDR 42: 629).

BETA VULGARIS. SUGAR BEET: In California, A. M. Golden found that emergence of the sugar beet nematode (Heterodera schachtii) from cysts was stimulated by diffusates of leaves, as well as of roots, of the sugar beet (PDR 42: 188).

Meloidogyne incognita var. acrita, root-knot nematode. Control by soil fumigation of root-knot nematodes affecting sugar beet production in California was reported by Bert Lear and D. J. Raski. Broadcast applications of D-D (1, 3-dichloropropene and 1, 2-dichloropropane) EDB (ethylene dibromide), Telone (1, 3-dichloropropene), and Nemagon (1, 2-dibromo-3-chloropropane) resulted in good root-knot nematode control and increased sugar yields (PDR 42: 861).

C. W. Bennett and J. E. Duffus described a rosette disease of sugar beet caused by a graft-transmissible virus in California. The disease has been observed annually over a period of several years, and is recognized only on sugar beet (PDR 41: 1001).

Incidence of savoy (virus) in relation to the variety of sugar beets and to the proximity of sugar beets and to the proximity of wintering habitat of the vector, Piesma cinerea, was discussed by G. H. Coons and others. If the disease were to become serious, the possibility of effective control by breeding for savoy resistance was suggested (PDR 42: 502).

GOSSYPIUM spp. COTTON: The sixth report of the Committee on Cotton Disease Losses, of the Cotton Disease Council, lists the estimated losses to the cotton crop from diseases in 1957 (PDR 42: 169).

Results of preliminary experiments with gibberellic acid for treatment of cotton seed were discussed by D. R. Ergle and L. S. Bird (PDR 42: 320).

The efficacy of various fungicides, calcium salts, growth regulators and antibiotics, when mixed with the covering soil, for control of the cotton seedling disease complex is borne out by the results of further tests reported by C. D. Ranney and L. S. Bird (PDR 42: 785).

J. B. Sinclair gave results of screening tests with various fungicides for control of Rhizoctonia damping-off (R. solani) of cotton seedlings (PDR 41: 1059).

D. C. Erwin and H. T. Reynolds reported results obtained from seed treatment with Thimet (O, O-dimethyl S-(ethylthiomethyl) phosphorodithioate), alone or in combination with other materials, to control Rhizoctonia solani and Pythium debaryanum (PDR 42: 174).

GOSSYPIUM BARBADENSE. EXTRA-LONG-STAPLE COTTON: Meloidogyne incognita acrita, root-knot nematode. Harold W. Reynolds discussed the economic importance and methods of control of the cotton root-knot nematode on extra-long-staple cotton and reported the results of a field-scale fumigation experiment. A highly significant increase in yield of cotton was secured with preplanting soil fumigation. Effective control measures practiced in the Southwest were crop rotation, summer fallow and soil fumigation (PDR 42: 944).

HIBISCUS CANNABINUS. KENAF: Meloidogyne incognita, root knot nematode. Soil fumigation experiments by T. E. Summers and C. C. Seale indicated that the use of the fumigant chloropicrin may result not only in effective control of the nematodes that cause severe damage to kenaf in Florida, but also in a significant increase in fiber yield (PDR 42: 792).

LINUM USITATISSIMUM. FLAX: Aster yellows (virus). Although aster yellows has been observed in the Midwest for more than 25 years this is the first time that it has become prevalent and destructive in commercial flax fields in Minnesota. In recent years from a trace to 1 or 2 percent infection has been common in many fields in Minnesota. In 1957 infection varied from a trace to 30 percent and 20 percent was not uncommon. The disease was widespread throughout the entire State, and in North and South Dakota as well. The recent outbreak is attributed to the high numbers of the insect vector, Macrosteles fascifrons. This virus is neither seedborne nor mechanically transmitted (R. A. Frederiksen and J. J. Christensen, PDR 41: 994).

Curly top (virus). A disease present in experimental flax tests in Texas the past three seasons and in some commercial fields in 1957 has been identified as curly top, according to I. M. Atkins and others. Recent studies have shown that the beet leafhopper (Circulifer tenellus), the only known vector for the curly top virus, has moved into Central Texas. No variety tested is immune or even highly resistant (PDR 41: 995).

MENTHA PIPERITA. PEPPERMINT: Control of Verticillium albo-atrum presents a difficult problem which is aggravated by the existence of the pathogen within the host and its survival in the soil, according to R. C. Goss in Indiana. Good commercial control of the disease was obtained from soil treatment with CBP-55 (PDR 42: 177).

NICOTIANA TABACUM. TOBACCO: Bacillus aroideae, black leg. O. D. Morgan reported an unusual occurrence of black leg in tobacco plant beds and fields in Maryland. The hollow stalk disease has occurred a number of times in Maryland and is widespread but infrequently found. Bed rot and black leg have been found separately on rare instances in Maryland, but this is the first time they have been found together on the same farms and causing moderate losses to the grower (PDR 42: 318).

Peronospora tabacina, blue mold or downy mildew. Reports received by the Plant Disease Warning Service stated that blue mold occurred in Florida, Georgia, North Carolina, South Carolina, Virginia, Maryland and Pennsylvania during 1957. The disease occurred in many plant beds, causing slight to occasionally severe damage. A high percentage of growers used fungicide treatments for prevention of the disease. This is probably the explanation for the generally mild attacks. In November, blue mold made an out-of-season appearance in one Tift County field of volunteer tobacco plants. Dissemination by atmospheric turbulence of spores of P. tabacina was reported by P. E. Waggoner and G. S. Taylor. An understanding of the influence of weather upon the spread of fungi pathogenic to crop plants is one of the important problems in agricultural meteorology. The number of spores disseminated per lesion in the field and the hour of dissemination are critical. These facts are fundamental in the appraisal of risk of disease loss, in the forecast of multiplication of pathogens, and in the design of disease control measures. The hourly concentration of air-borne spores of P. tabacina has been measured above known numbers of tobacco blue mold lesions and is reported in this article (Phytopath. 48: 46).

Pseudomonas tabaci, wildfire. Studies on control in burley tobacco plant beds were continued at the Mountain Research Station in North Carolina, along the same general lines followed in 1955 and 1956. Excellent control resulted from four weekly spray applications of either streptomycin sulfate or streptomycin nitrate (Luther Shaw and G. B. Lucas, PDR 41: 939).

P. M. Miller and G. S. Taylor reported superior control of tobacco stunt nematodes (Tylenchorhynchus claytoni) with a nematocide mixture. In plots fumigated with 12 gallons per acre of Dorlone (a mixture containing 19% ethylene dibromide (EDB) and 75 percent 1, 3-dichloropropene) the average plant height of shade tobacco was 84 percent greater than that of plants in untreated plots (Phytopath. 48: 264).

OCIMUM BASILICUM. SWEET BASIL: In California, on land planted to sweet basil S. A. Sher and others obtained good control of root knot nematodes (Meloidogyne incognita acrita) from chisel applications of methyl bromide (PDR 42: 288).

SACCHARUM OFFICINARUM. SUGARCANE: Ratoon stunting disease (virus), first reported as occurring in Louisiana in 1951, has been causing serious losses in all sugarcane-growing areas, according to R. H. Stover. The disease is caused by a virus that is easily transmitted mechanically. All varieties were 100 percent infected, and the recently released ones were rapidly becoming infected. Highly significant losses in tonnage per acre occurred in both the cane and stubble crops in yield trials with old and new varieties. Control of the disease with hot air is now being used on a commercial scale in Louisiana. Results have shown that after the disease is eliminated from it a variety regains some if not all of its former yielding capacity. Results support the belief that the gradual decline in yield that has occurred throughout the world may be due to the ratoon stunting disease (Phytopathology 47: 535). R. J. Steib and I. L. Forbes reported Johnson grass and corn as carriers of the virus of ratoon stunting disease of sugarcane. Since Johnson grass may, under field conditions, act as a carrier of the virus, which may also be spread by implements from shoots produced by old rhizomes, treated seed cane and its progeny should be planted in areas free from Sorghum halepense (Sug. Bull., N. Orleans 35 (23: 375, 379, 1957).

DISEASES OF VEGETABLE CROPS

Root knot (Meloidogyne incognita acrita) control in vegetable crops using D-D (1, 3-dichloropropene; 1, 2-dichloropropane) and EDB (ethylene dibromide) with and without vermiculite as a carrier was reported by N. N. Winstead and others in North Carolina. In all cases the nematocides, irrespective of method of application, gave satisfactory control of root knot (PDR 42: 180).

Philip J. Leyendecker and M. Baxter Jones reported aster yellows and curly top virus diseases on vegetables in New Mexico. The aster yellows incidence ranged from 38 to 63 percent. Curly top was so severe on spinach that variety tests were abandoned (PDR 42: 42).

ALLIUM CEPA. ONION: Results of tests with fungicides for control of onion diseases in Florida were summarized by R. S. Cox. The most common disease in the field was purple blotch (Alternaria porri) (PDR 41: 789).

G. D. Lewis and others found that rootknot nematodes (Meloidogyne spp.) reproduce in infected onions (PDR 42: 447).

ASPARAGUS OFFICINALIS. ASPARAGUS: Zineb was the most effective of several fungicides tested by M. B. Linn and K. R. Lubani for control of asparagus rust (Puccinia asparagi) (PDR 42: 669).

BRASSICA OLERACEA, var. BOTRYTIS. BROCCOLI, CAULIFLOWER: Control of downy mildew, Peronospora parasitica, of broccoli with antibiotics and fungicides was reported by J. J. Natti in New York. Copper-zinc and copper-manganese were the most effective fungicides, but caused some injury. Manzate and Spergon SL were the most promising on the basis of control without injury (PDR 41: 780).

Plasmodiophora brassicae, club root. In experiments on the control of clubroot of cauliflower, Leo Campbell used fungicides added to the transplanting water or mixed with the soil in strips. In the first method, in comparison with untreated checks, zineb reduced clubroot development and increased the yield of tops, whereas Terraclor reduced disease development and increased yield. Each of the other fungicides gave excellent control of the disease but did not increase yields significantly. In the second method clubroot development was reduced and the yield of tops increased compared with untreated checks. This treatment also gave excellent control of annual weeds (Phytopath. 47: 518).

BRASSICA OLERACEA var. CAPITATA: Plasmodiophora brassicae, clubroot, is one of the more important diseases of crucifers on Long Island, New York, according to R. C. Cetas. The application of 1 quart of V. P. M. (31 percent sodium methyl dithiocarbamate) per 100 square feet as a drench resulted in good weed control and almost perfect control of clubroot of Chinese cabbage in naturally-infested fields. Other experiments also proved satisfactory (PDR 42: 324). Griseofulvin is effective in controlling club root when applied as a soil treatment. Zinc glass frit reduced the amount of disease but lithium salts were ineffective when applied as soil treatments (Saul Rich, PDR 41: 1033).

CAPSICUM sp. PIMIENTO PEPPER: Spraying pimiento peppers with a mixture of streptomycin and basic copper sulfate provided best overall control of bacterial spot (Xanthomonas vesicatoria) and ripe rot (Vermicularia capsici) in 1957, according to W. A. Chandler. Control of bacterial spot was also obtained in 1956 and 1957 with basic (Tri-basic) copper sulfate alone and with Dyrene (2, 4-dichlo-6-(o-chloranilino)-s-triazine) (PDR 42: 652).

CAPSICUM FRUTESCENS: PEPPER: (Mosaic virus). In Delaware, D. F. Crossan and E. M. Rahn reported the development and evaluation of resistant pepper varieties and selections by means of artificial inoculation in the field with tobacco mosaic virus. Three resistant varieties or selections were considered superior to California Wonder, with respect to yield (PDR 42: 48).

CUCURBITS. CUCUMBER, MELON, SQUASH: Certain insecticide-fungicide combination treatments were more effective than the same fungicides used alone as cucurbit seed protectants in tests reported by J. J. Natti and others in New York (PDR 42: 127).

Colletotrichum lagenarium, anthracnose. The effect of seed treatment on development of anthracnose in watermelon seedlings was reported by Robert Aycock. The study was designed to determine the efficiency of various fungicidal preparations against seed-borne anthracnose spores and their effect on seedling emergence and survival when applied to non-infested seed, and also the influence of various fungicidal rates and methods of application on incidence of disease and injury (PDR 42: 134).

Erysiphe cichoracearum, powdery mildew. According to S. S. Ivanoff in Mississippi, hyperplastic symptoms on greenhouse-grown watermelon fruits, in the form of pimples, warts, and similar intumescences, were found to be caused by powdery mildew, probably Erysiphe cichoracearum. A preliminary test has shown that fungicidal dips may be of help should the disease prove to be of economic importance (Phytopath. 47: 599).

S. D. Van Gundy and J. C. Walker reported the relation of temperature and host nutrition to occurrence of angular leaf spot (Pseudomonas lachrymans) of cucumber in Wisconsin. Six isolates of P. lachrymans from widely separated geographical areas were found to be similar in pathogenicity and cultural characteristics (Phytopath. 47: 615).

Temperature and temperature-light effects on the concentration of squash mosaic virus in leaves of growing cucurbits was reported by John B. Bancroft. The concentration of the virus in leaves of pumpkin and squash plants grown under various conditions of light and temperature was measured spectrophotometrically (Phytopath. 48: 98).

IMPOMOEA BATATAS. SWEETPOTATO: In preliminary tests reported by L. J. Kushman and G. B. Ramsey dipping sweetpotato roots in a solution of Dowicide A (sodium o-phenylphenoxide) or borax gave good control of decay during marketing (PDR 42: 247).

Fusarium oxysporum f. batatatis, stem rot or wilt. E. M. Hildebrand and others reported an investigation which sheds light on the cultural identity and pathogenic behavior of the sweetpotato stem rot or wilt disease. A total of 36 cultural units or combinations thereof were tested 3 years in succession on the three varieties Tinian, Triumph, and Porto Rico. In all 3 years the virulent parent and single-spore progeny strains of the fungus behaved essentially alike in degree and range of infection (PDR 42: 112).

L. R. Krusberg and L. W. Nielsen planted Porto Rico sweetpotatoes in soil naturally infested with Meloidogyne incognita acrita to study the pathogenesis of this nematode in sweetpotato. Nematode feeding stimulated the formation of several atypical tissues: giant cells, "abnormal xylem", hyperplastic parenchyma, and cork. Young plants heavily infected had small roots and tops; the roots had numerous cracks (Phytopath. 48: 30).

Internal cork (virus). Freeing sweetpotato varieties from cork virus by propagation with tip cuttings was reported by E. M. Hildebrand (Phytopath. 47: 452). The internal cork virus was transmitted by the aphid Myzus persicae in experiments reported by H. W. Rankin and and J. H. Girardeau, Jr. in Georgia (PDR 42: 581).

W. J. Martin quoted descriptions and recorded the results of a literature review of mosaic of sweetpotato and related virus diseases (PDR 41: 930).

LACTUCA SATIVA. LETTUCE: B. A. Friedman reported the results of a compilation of 726 inspections, or approximately 76 percent of all rail shipments of western-grown lettuce on the Pittsburgh, Pennsylvania market during the first 6 months of 1957. Only 6.2 percent of the carlot shipments were reported free of disease. Decay was found in 83.3 percent of the inspections, and averaged 6.7 percent in affected cars or 5.6 percent in all cars (PDR 42:250).

R. G. Grogan reported the association of Olpidium with the big-vein disease of lettuce Phytopath. 48: 292).

Orobanche ramosa, broomrape, the clandestine root parasite of many herbaceous plants, causes serious losses in lettuce and tomato in the Alvarado area of California, according to Stephen Wilhelm and others. Attempts to kill its minute seed in soil have been successful only by fumigation with methyl bromide (Phytopathology 47: 537).

LYCOPERSICON ESCULENTUM. TOMATO: The uptake and movement of cycloheximide acetate-2-C^{14} into tomato plants has been examined and results reported by A. J. Lemin and W. E. Magee. These experiments suggested that cycloheximide acetate may be absorbed intact through the roots of the tomato plant, but that it derives its antifungal activity from free cycloheximide released in the plant (PDR 41: 447).

Recent developments on the control of foliar diseases (Botrytis cinerea, Phytophthora infestans, Stemphylium solani, and Xanthomonas vesicatoria) of tomato in south Florida were reported by R. S. Cox and N. C. Hayslip (PDR 41: 878).

Cladosporium fulvum, leaf mold, was reported on field grown tomatoes in Connecticut in plots of Sioux tomatoes planted at the Mt. Carmel Farm on a piece of land which had not been in tomatoes for at least 25 years (Saul Rich, PDR 41: 1058).

Fusarium oxysporum f. lycopersici, wilt. Vapam was not effective as a soil treatment for control of the tomato Fusarium wilt fungus in tests reported by A. G. Plakidas in Louisiana (PDR 41: 778).

Soil fumigation with methyl bromide gave excellent control of broomrape (Orobanche ramosa) a flowering plant), a serious pest of tomato fields in California, in experiments reported by Stephen Wilhelm and others (PDR 42: 645), see also under LACTUCA SATIVA.

LYCOPERSICON ESCULENTUM. TOMATO: Phytophthora infestans, late blight. In the 1957 season, late blight of potato and tomato was reported to the Plant Disease Warning Service from many States and from Canada. In Wisconsin, late blight of tomato made very little headway during July and August. However, cooler nights with heavy dews and fog and some rain changed the picture by the end of September, when blighted vines could be found in home gardens and most commercial areas showed from light to very severe infections. In 20 locations in six North Central States, Hoopeston, Illinois was the only station where blight did not appear as forecast because of a continuous rigorous control program. In general late blight was found earlier in the North Central Region in 1957 than last year and occurred in epiphytotic proportions in southern Minnesota, Illinois, Indiana, northern Minnesota, North Dakota, central Nebraska, western Nebraska and in Wisconsin. In South Carolina, late blight was introduced into most commercial fields on infected transplants. A total of 32 periods was favorable for sporulation with a total of 9.54 inches of rainfall. The disease spread was rapid and most fields were severely damaged.

J. B. Sinclair and others reported from Louisiana that greater total yields of marketable tomatoes were obtained with various organic fungicides and combinations than with copper, but that effectiveness for control of late blight could not be determined because of lack of natural infection in the experimental plots (PDR 41: 657).

Verticillium albo-atrum, wilt. In Wisconsin, L. V. Edington and J. C. Walker reported studies on the influence of soil and air temperature on Verticillium wilt of tomato. Each factor had a significant effect, but soil temperature was more influential (Phytopath. 47: 594).

D. Davis and S. Halmos studied the effect of air moisture on the predisposition of tomato to bacterial spot, Xanthomonas vesicatoria, in New Jersey (PDR 42: 110).

E. E. Butler and others observed tomato fruit pox, cause unknown, in green-wrap fields in California. In some fields approximately 75 percent of the vines bore fruit with pox symptoms. Little information is available concerning the distribution and importance of the disease in the United States (PDR 42: 850).

PHASEOLUS LIMENSIS. LIMA BEAN: R. E. Wester and others described a freezing technique for preserving sporulating lima bean downy mildew (Phytophthora phaseoli) infections in a viable condition. The fungus has been kept at Beltsville, Maryland, in a viable condition at -10°F for more than 100 days without any reduction in pathogenicity (PDR 42: 413). In Tennessee, E. L. Felix pointed out the advantages of standard 5-day units in forecasting plant diseases. R. A. Hyre found the 5-day mean as accurate as the widely employed 7-day mean and adopted it in the correlation and forecasting of downy mildew (Phytophthora phaseoli) in lima bean (PDR 41: 223).

PHASEOLUS VULGARIS. BEAN: R. N. Goodman and W. M. Dowler reported the absorption of streptomycin by bean plants as influenced by growth regulators and humectants (PDR 42: 122).

Fusarium solani f. phaseoli, root rot. In Idaho, five different genera of fungi were isolated from bean plants affected with root rot. All of the isolates that were demonstrated to be prime pathogens were identified as F. solani f. phaseoli. This organism is capable of entering plants by direct penetration, through the stomata on the hypocotyl, and through wounds (Paul Chatterjee, Phytopath. 48: 197).

M. M. Afanasiev and E. L. Sharp reported results of various bactericidal sprays on control of halo blight (Pseudomonas phaseolicola) disease of garden bean. In conclusion they stated that Bordeaux and Agri-mycin 100 ppm gave the best results in controlling halo blight (PDR 42: 1071).

Uromyces phaseoli typica, rust. Experiments conducted at the Florida Sub-Tropical Experiment Station indicated that improved control of rust of pole beans was obtained when maneb was added to sulfur dusts. Spraying with maneb two or three times before the fields were staked was a valuable adjunct to the dusting program (R. A. Conover, Fla. Hort. Soc. Proc. 69: 247-250, 1957). The effect of rust on bean plants is defoliation which progresses fairly rapidly after infection becomes general. Since, however, the rust does not appear on pea beans until late, that is when the pods are maturing, little or no damage is caused to the plant. In fact it is considered an advantage, according to W. H. Burkholder, to have the disease appear at this time of year in New York dry bean fields, when the grower wants his beans to ripen rapidly to avoid an early frost (PDR 41: 1036). W. J. Zaumeyer reported that treatment of lower surfaces of bean leaves with either oligomycin or anisomycin gave better protection against infection by U. phaseoli var. typica than did treatment of upper surfaces (Phytopathology 47: 539).

In California, cross-protection between the bean rust fungus, Uromyces phaseoli typica, and tobacco mosaic virus (TMV) was demonstrated in bean leaf tissue. TMV-infected bean leaves showed a resistance to rust (apparently due to inhibition of urediospore germination); rusted bean leaves showed a resistance to TMV infection. Aqueous diffusates from urediospores sprayed on bean leaves protected against both rust infection and the formation of TMV local lesions in the leaves (E. M. Wilson, Phytopath. 48: 228).

Weather injuries. Observations during the past 3 1/2 years have convinced R. S. Cox that wind damage results in greater losses to many vegetable crops in the Everglades and surrounding areas year in and year out than any other single factor. Effects on snap bean are described. The name suggested for this physiological effect is wind-whip (PDR 41: 795).

PISUM SATIVUM. PEA: Purple blight (?nutritional). W. T. Schroeder and others pointed out that purple blight may develop on plants at any stage of growth, but injury is greatest when the disorder occurs early and results in a blighted plant with no pods or very few, small pods. Although purple blight has occurred in 10 of the 14 years since it was first observed, the disorder is sporadic in occurrence and may not develop in the same area 2 years in succession Phytopath. 48: 264).

RAPHANUS SATIVUS. RADISH: Red Globe type radish roots showed infections of Peronospora parasitica in the field in Connecticut this year. In spite of the very dry summer, a few infections showed up early and were later spread by irrigation. The losses in the second planting, with the beginning of cooler weather, were as high as 75 percent of the radishes harvested on some farms (PDR 41: 1058).

SOLANUM MELONGENA. EGGPLANT: In Michigan, C. L. Burton and D. J. deZeeuw concluded that seed transmission of the eggplant wilt (Verticillium albo-atrum) is very unlikely (PDR 42: 427).

SOLANUM TUBEROSUM. POTATO: Alternaria solani, early blight. Increased incidence of early blight in southeastern Idaho for the past 5 years is associated with wider use of sprinkler irrigation, according to J. W. Guthrie. During 1957 complete defoliation of the plants occurred in many fields totalling about 3000 acres. In every instance the fields were irrigated by sprinklers (PDR 42: 246).

Corynebacterium sepedonicum, ring rot. It is apparent that ring rot prevalence has varied considerably from year to year without evidence of consecutive build-up over a period of years, according to G. H. Starr in Wyoming. If seed is to be kept free from ring rot, all known control measures will have to be followed (Amer. Potato Jour. 34: 268). Results of experiments conducted in Maine by Reiner Bonde and Barbara Johnson seemed to indicate that during the process of cutting seed potatoes, streptomycin sulfate, when combined with a number of disinfectants and other chemicals, may have an additive effect on ring rot control (PDR 42: 781).

Erwinia atroseptica, blackleg. Harry C. Fink reported that potato seed-piece treatment with streptomycin-fungicide mixtures did not control blackleg rot in field tests although it had given promising results in laboratory trials (PDR 42: 965).

Heterodera rostochiensis, golden nematode. Encysted golden nematode larvae placed in the centers of bales of burlap bags were killed by di-electric heat in experiments reported by W. F. Mai in New York (PDR 42: 449).

Phytophthora infestans, late blight (see also under tomato). Reiner Bonde, R. A. Hyre, and Barbara Johnson reported that a forecast and warning service was conducted for late blight of potato in Aroostook, Maine for the third successive year. The estimated average foliage blight was about 1 percent. This small amount of blight was quite accurately reflected by both the rainfall-temperature and the relative humidity-temperature methods of predicting blight. The lack of infection of potato cull piles and the good spraying program carried out by most of the potato growers in Maine were big factors in the small amount of late blight infection in the County in 1957 (PDR 41: 936). In Maine, studies were made by Reiner Bonde and Barbara Johnson on the additive effect of Agri-mycin used with different fungicides in the control of late blight (PDR 42: 330).

In trials reported by R. A. Young and W. J. Tolmsoff effectiveness of Vapam soil treatment for controlling Verticillium wilt (Verticillium albo-atrum) carried over into the succeeding year (PDR 42: 437).

Haywire (virus). R. E. Webb and E. S. Schultz reported possible relation between haywire of potato and big bud (virus) of tomato. Their results indicated that haywire of potato in Nebraska may be caused by the tomato big bud virus (PDR 42: 44).

Knobby tuber disease (? virus). This disease was first observed in experimental fields of the variety Katahdin at Aroostook Farm, Presque Isle, Maine in 1951. The disease is sometimes tuber-transmitted but some plants from affected tubers appear to recover. The cause of the disease is not known but it may be a virus similar to that causing spindle tuber (Amer. Potato Jour. 34: 227-229).

VIGNA SINENSIS: COWPEA: Fusarium oxysporum f. tracheiphilum, wilt. W. W. Hare reported that the Mississippi Crowder, a new variety of cowpea, is highly resistant to Race 1 and tolerant to Races 2 and 3 of F. oxysporum f. tracheiphilum (Phytopath. 47: 565).

MYCOLOCY AND PLANT DISEASE REPORTING SECTION, CROPS PROTECTION RESEARCH BRANCH, CROPS RESEARCH DIVISION, BELTSVILLE, MARYLAND